

User manual MINTRISK

General

MINTRISK is a tool to calculate the risks of vector-borne animal diseases, which allows for comparison of the risk posed by different infections. The tool can integrate various aspects of the risk but still distinguish uncertainty, probability and impact, which are important in dealing with these questions.

Get started

You can start MINTRISK in your internet browser. The address is: <http://www.wecr.wur.nl/mintrisk2>

Field Code Changed

When you like to work with MINTRISK you need a username and a password. If you don't have credentials you can make a temporary account, which works for 8 hours. Click the menu item 'Log in' and select 'register' and fill the form.

Log in

In order to work with MINTRISK, you need to log in. Click the menu item 'Log in', enter your credentials and hit the 'Log in' button.

Log in

Username

Password

Log in

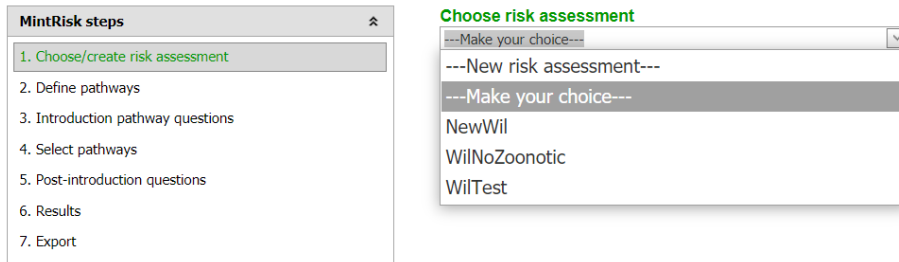
After you have successfully logged in, you can work with the MINTRISK model.

Step 1: Choose/create risk assessment

Prerequisites: logged in

After you are logged in, you will be automatically redirected to the 'Choose/create risk assessment' page. You can go back here any time you want by choosing '1. Choose/create risk assessment' at the left-hand menu.

When you work with MINTRISK for the first time, you need to create a risk assessment. Click on 'Choose/create risk assessment' and select '---New risk assessment---'.



A new form appears where you can give a short description of your model.

Choose risk assessment

2 WilTest

Risk assessment properties

1 Name for saving your risk assessment WilTest

Description 3 Test model Excel vergelijking

...

...

Settings 4 Zoonotic

5 Save changes risk assessment

- You can give your risk assessment a name (see 1 in red color in the figure above). This name will be used to save the risk assessment and will appear in the drop down list in the box 'Choose risk assessment' (see 2). This is how you can retrieve stored risk assessments.
- You can enter a description of your risk assessment (see 3), e.g. to indicate for which disease and region the risk assessment is performed. This information is purely informative and will not affect the risk assessment.
- You can indicate whether the disease is zoonotic by ticking the check box (see 4). If the disease is zoonotic, questions on human infections will be included in the risk assessment.

When ready, you can save your model with the 'Save changes risk assessment' button (see 5). You are now ready to define your pathways.

When you are a returning user, you can see your previous assessment(s) in the list at 'Choose risk assessment'. You can either choose a previous risk assessment or create a new one.

Step 2: Define pathways

Prerequisites: logged in, risk assessment is chosen

Every risk assessment in MINTRISK is based on pathways. A pathway is defined as any route along which a pathogen can be introduced into a new area.

When you hit menu item '2. Define pathways', you can add the pathways you need. You can create as many pathways as you like.

Define your pathways

Pathway name	Description	Type	Action
WilTestPW1		Host animal	Edit Delete
WilTestPW2		Vector	Edit Delete
WilTestPW3		Human	Edit Delete
WilTestPW4		Commodity	Edit Delete
WilTestPW5		Host animal	Edit Delete

2 3

1

New pathway

- You can add a new pathway by clicking the button 'New pathway' (see 1 in red color in the figure above)
- You can edit the values of an existing pathway by clicking 'Edit' behind the pathway you would like to change (see 2)
- You can delete a pathway by clicking 'Delete' behind the pathway you would like to delete (see 3)

Step 3: Introduction pathway questions

Prerequisites: logged in, risk assessment is chosen, risk assessment has one or more pathways

For every pathway in your risk assessment you have to answer a set of questions. Click the menu item '3. Introduction pathway questions' at the left-hand menu. You will enter the form for answering the pathway questions.

Pathway Copy all answers from pathway

1 WITestPW1 (Host animal) ---Make your choice--- Copy 9

Risk aspect

2 Epidemic occurrence

Question	Help	Answer	Value	Uncertainty
18. Do epidemics of the disease occur somewhere in the risk region addressed?	?	yes		
19. What is relative size of the epidemic area related to the full risk region?	?	Own value 3	0.02 4	
22. What is the duration of the period between introduction of the infection into the region and notification of the infection (i.e. what is the length of the high risk period)?	?	short		moderate 5
23. Are humans considered dead-end hosts?	?	yes 6		
24. What is the frequency with which epidemics occur in the risk region?	?	Own value	30	
25. How high is the prevalence of the infection in host animals in the risk region at the end of the high risk period?	?	Own value	0.01	
26. How high is the prevalence of the infection in vectors in the risk region at the end of the high risk period?	?	Own value	0.001	
27. How high is the prevalence of the infection in humans in the risk region at the end of the high risk period?	?	Make your ch		
Risk			low/moderate 8	(0.41)

Calculate (and save) 7

- You can choose the pathway for which you will answer the questions (see 1 in red color in the figure above)
- The questions are grouped by risk aspects. You can choose a risk aspect (see 2)
- After you have chosen a pathway and a risk aspect the questions appear. You can enter the answers in the 3rd column by selecting an answering category from the drop-down menu (see for example 3). Please note that if 'unknown' is selected, no uncertainty needs to be given. The field to fill out the uncertainty for questions answered with 'unknown' will disappear once the model results have been calculated and saved. When you decide to use another value, e.g. 'very low' you have to use calculate and save again to enable the uncertainty options again.
- Alternatively, you can enter a quantitative value to answer the question in the 4th column if you have detailed quantitative information available by selecting the option 'own value' (see for example 4). Please note that in such case no uncertainty needs to be given. The field to

fill out the uncertainty for questions with a value entered will disappear once the model results have been calculated and saved. When you decide to use another value, e.g. 'very low' you have to use calculate and save again to enable the uncertainty options again.

- Besides an answer, you can also enter your uncertainty about the answer in the 5th column (see for example 5)
- When you need some more information or explanation about the question, you can click the i-button in the 2nd column (see for example 6). Here you can also find the quantitative explanation of the answering categories.
- After you have answered the questions you can save your answers and make calculations for the pathway by hitting the 'Calculate (and save)' button (see 7). When ready the calculated risk estimate will be shown (see 8).
- When a question is in gray, like question 27 in the above figure, it means you do not have to answer the question because of your model settings.
- You can copy all answers from a previously answered pathway. Choose the pathway to copy from and hit the 'Copy' button (see 9).

Step 4: Select pathways

prerequisites: logged in, risk assessment is chosen, risk assessment has one or more pathways, results of all pathways are calculated

After the results for all pathways are calculated, you can select pathways based on the calculated risk estimates. In the left menu, click at '4. Select pathways'. Selection of the pathways is necessary to limit the number of pathways in the successive calculations and to present the results in a convenient format. It is recommended to select the pathways with the highest calculated risk estimate in this step. The user can always return to this step and enter alternative selections. The maximum number of pathways you can select is 3. Save your selection with the button 'Save selections'.

Choose your pathways (maximum=3)

- WiITestPW1 (Overall risk: -0.71)
- WiITestPW2 (Overall risk: 0.14)
- WiITestPW3 (Overall risk: -6)
- WiITestPW4 (Overall risk: 0.38)
- WiITestPW5 (Overall risk: -6)

Save selections

Step 5: Post-introduction questions

prerequisites: logged in, risk assessment is chosen, risk assessment has one or more pathways, results of all pathways are calculated, a maximum of three pathways is selected

You also have to answer a set of questions concerning spread, persistence and impact after introduction of the disease. Click the menu item '5. Post-introduction questions'. You will enter the form for answering the post-introduction questions. The results of your selected pathways are on top (see figure below).

Pathway overview	WiiTestPW2	WiiTestPW4
Level	moderate	high/low
Epidemic occurrence	moderate	low
Endemic occurrence	moderate	very high
Pathways introduction (Entry)	very low/low	low/moderate
Level of transmission	moderate	low/moderate
Probability of establishment	very low	low/moderate
Overall rate of introduction		

Post-introduction questions
Risk aspect

1 Annual extent of spread

Question	Help	Answer	Value	Uncertainty
52. What is the size of the (host) population at risk in the area at risk?	2	very large	3	low
53. What is the expected number of infection generations per vector season?	4	5		
54. What is the overlap between (high) vector abundance and host density in the area at risk?	4	very high		low
55. To what extent does the presence of non-susceptible hosts in the area at risk result in a dilution effect?	4	minimal		high
56. To what extent is local spread in the area at risk inhibited by spatial effects?	4	largely		moderate
59. To what extent does movement of vectors contribute to long-distance spread in the area at risk?	4	high		moderate
60. To what extent does movement of hosts contribute to long-distance spread in the area at risk?	4	very high		low
63. What is the expected time until detection and reporting of the disease in the area at risk, leading to implementation of prevention and control measures if applicable?	4	very long		low
64. What is the expected impact of control measures aiming at vector control and larval control on spread of the infection in the area at risk?	5	very high		low
65. What is the expected impact of control measures aiming at host animals on spread of the infection in the area at risk?	5	high		moderate
Risk		very low/low	7	

6 Calculate (and save)

The questions are grouped by risk aspects. You can choose a risk aspect (see 1 in red color in the figure above)

- After you have chosen a risk aspect the questions will appear. You can enter the answers in the 3rd column by selecting an answering category from the drop-down menu (see for example 2 in the figure above). Please note that if 'unknown' is selected, no uncertainty needs to be given. The field to fill out the uncertainty for questions answered with 'unknown' will disappear once the model results have been calculated and saved. When you decide to

use another value, e.g. 'very low' you have to use calculate and save again to enable the uncertainty options again.

- Alternatively, you can enter a quantitative value to answer the question in the 4th column if you have detailed quantitative information available by selecting the option 'own value' (see for example 3). Please note that in such case no uncertainty needs to be given. The field to fill out the uncertainty for questions with a value entered will disappear once the model results have been calculated and saved. When you decide to use another value, e.g. 'very low' you have to use calculate and save again to enable the uncertainty options again.
- Besides an answer, you can also enter your uncertainty about the answer in the 5th column (see for example 4)
- When you need more information or explanation about the question, you can click the i-button in the 2nd column (see for example 5). Here you can also find the quantitative explanation of the answering categories.
- After you have answered the questions you can save your answers and make calculations for the pathway by hitting the button 'Calculate (and save)' (see 6). When ready the calculated risk will be shown (see 7).

Step 6: Results

prerequisites: logged in, risk assessment is chosen, risk assessment has one or more pathways, results of all pathways are calculated, a maximum of three pathways is selected, results for the post-introduction part of the model are calculated.

Click the menu item '6. Results' at the left-hand menu. You will enter the form for further calculations of the model. Algorithms for these calculations were designed by experts. Due to uncertainty on the answers entered by the user (varying from low to high), multiple iterations (runs) are required to account for this uncertainty (by means of a so-called Monte-Carlo simulation). When the same random seed is used, the results of a re-calculation will be the same when input for the answers and uncertainties have not been changed.

When the number of runs is set to 1, the tool does not account for uncertainty. It is advised to use a relatively low number of runs (iterations), e.g. 10 or 100 to get first results for validation purposes. A large number (e.g. 1000) will take a relatively long time to calculate and is only advised when final results are calculated.

Calculate pathways and model

Runs:

1

Random seed:

2

3

Risk aspect

Pathways introduction (Entry) **5**

Level of transmission **1**

Probability of establishment **1**

Overall rate of introduction **1**

Risk aspect

Annual extent of spread **1**

Persistence (overwintering) **1**

Estimated epidemic size **1**

Economic impact **1**

Socio-ethical impact

Environmental impact

Overall risk **1**

WilTestPW2

4 moderate	1 very high
1 very low/low	1 low/moderate
1 moderate	1 low/moderate
1 very low	1 low/moderate

WilTestPW4

Risk assessment result

1 very low
1 very low
1 very low/low
1 low
1 very high
1 low
1 low

- You can enter the number of desired runs (see 1 in red color in the figure above). The more runs you enter, the longer it will take to calculate.
- When you have entered more than 1 run, you can choose the seed number (see 2). The default value, 17, is already selected.
- When you have entered all settings you can start calculating by hitting the button 'Calculate runs' (see 3)
- When ready an overview with the results will appear on your screen. When hovering over the i-button, the median (min-max) semi-quantitative risk score is displayed (see 4).
- A quantitative explanation of the semi-quantitative risk scores is displayed when hovering over the i-buttons connected to each of the risk aspects (see 5).

Step 7: Export

prerequisites: logged in, risk assessment is chosen, risk assessment has one or more pathways, results of all pathways are calculated, a maximum of three pathways is selected, results for the post-introduction part of the model are calculated, model calculations in step 6 are done

When you like to export the results of MINTRISK for further analysis, click menu item 'Step 7: Export' at the left-hand menu.

Current risk assessment: WilTest

Export current disease to Excel

Export all diseases to Excel

You will get a form like the figure above.

- When you like to have an overview in Excel with all answers to the questions and the calculated results for the current disease, hit the button 'Export current disease to Excel'. Alternatively, you can also export the results for multiple diseases at once by hitting the button 'Export all diseases to Excel' .