A risky business

The scenario

Australia is free of many of the pests and diseases that seriously impact on agriculture and horticulture in other countries. This allows us to trade our fruits, vegetables and grains with many other countries as they are seen as pest free. As a country, we need to protect our 'pest free status' so that we can continue to trade.

Yet, every day thousands of packages, people and transport vehicles arrive in Australia. Each one of these could potentially be carrying pests or diseases in the form of soil, plant materials or even microscopic fungi or bacteria. How can we protect our plant industries from all of these potential threats?

The first step is being prepared – we need to know what pests are out there, if they are likely to enter and establish here in Australia and how much damage they might cause. When we know this information, we can put plans in place to detect, diagnose and manage pest incursions.

Assessing the risk

As Project Officers working with the Biosecurity Services Group of the Australian government you have been asked to prepare a report assessing the risk of an exotic plant pest or disease to Australian plant industries.

You need to choose one of the pest or diseases below to research. Answer the questions on the worksheet and at the end of your report, use the tables provided to assess this pest as a high, medium or low risk to plant industries in Australia.

Possible pests you can research:

Insects	Invertebrates	Diseases
Khapra beetle	Giant African snail	Sudden oak death
Asian longhorn beetle	Pine wilt nematode	Banana bunchy top
Banana skipper butterfly	Golden apple snail	Citrus greening
Plum weevil		Wheat stripe rust
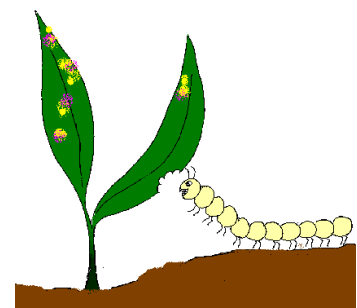
Pest risk review

Common name:

Scientific name:

Description:

Provide a brief description of the pest/disease to help identify it.

Reproduction:

How does this pest/disease reproduce? If you are researching an invertebrate, describe its lifecycle.

Dispersal:

How does this pest/disease spread from one area to another?

Origin and distribution:

Where is this pest/disease originally from? Where is it found in the world? Is it in Australia? Where in Australia?

Preferred habitat and climate:

What type of climate does the pest/disease prefer? Describe its habitat.

Impact:

What does this pest eat? What crops could this pest/disease cause damage to? Describe the damage likely to occur. Will the damage impact on the crop yield? How significant will this impact be?
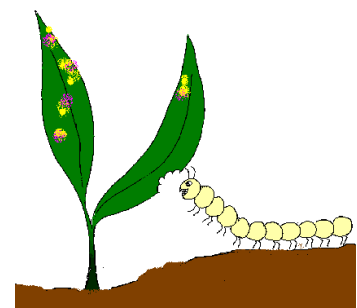
Analysing the risk

The potential risk of a pest is defined by:

Risk = likelihood x consequence

Using the information you found out about the pest, you now need to analyse the risk that this pest presents to Australia. Follow the steps to find out if your pest presents a high, moderate or low risk to Australia.

1. Assess the **likelihood** of your pest entering Australia. Use the tables to score the pest based on how easily it can <u>enter </u>the country, <u>establish</u> a population and <u>spread</u> to new areas.

2. Add the <u>entry</u>, <u>establishment</u> and <u>spread</u> scores together. Use the table to find out if the likelihood is low, moderate or high.

3. Assess the **consequence** of your pest. Use the table to score the pest based on its potential <u>impact</u>**.**

4. Use the table to find out if the **consequence** is high, moderate or low.

5. Use the **likelihood x consequence** matrix to find an overall risk rating for your pest.
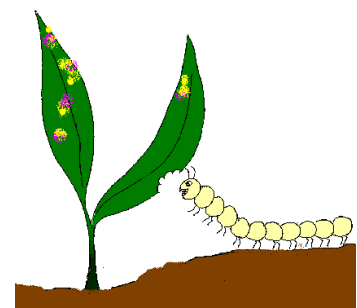
Likelihood

Use the tables to score the likelihood of your pest entering, establishing and spreading in Australia.

Entry

Things to think about:

- Where is the pest or disease found?
- Do we trade with areas that contain the pest or disease?
- Do we have lots of travellers arriving from this area?
- How is this pest or disease likely to be transported? Soil, food products, spores on clothing or in water?

Entry criteria	Score
The pest or disease is most likely to travel to Australia via	
wind currents	3
in soil or on food products	3
in shipping containers or goods other than food	2
with people, either in luggage or on clothing	1
The pest or disease is found in an area that	
is geographically close to Australia or a frequent trade partner	3
regularly trades with Australia	2
has a strong tourism link with Australia	2
rarely trades with Australia	1
has a weak tourism link with Australia	1
Total score for entry:	

CRC PLANTbiosecurity
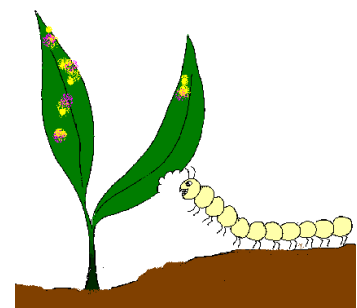
Establishment

Things to think about:

- What climates and habitats are preferred by this pest or disease?
- What food or host is preferred y this pest or disease?

Establishment criteria	Score
The preferred climate and habitat of the pest or disease	
matches one that can be found in Australia	3
is fairly similar to what can be found in Australia	2
is completely different to what is found in Australia	1
Preferred food source or host of the pest/disease	
is found in Australia	3
a similar food source or host is found in Australia in a suitable climate zone	2
is found in Australia but not within a suitable climate zone	1
no food sources or hosts are found in Australia	1
Total score for establishment:	

Spread

Things to think about:

- How does the pest or disease reproduce?
- How does the pest or disease move from one area to another?

Spread criteria	Score
The pest or disease	
has a fast lifecycle and produces large numbers of offspring or spores	3
Has a slow lifecycle and produces few offspring	1
The pest or disease moves between areas	
by wind or rain	3
transported in goods, infected materials or via people	2
independently (flies or crawls)	1
Total score for spread:	
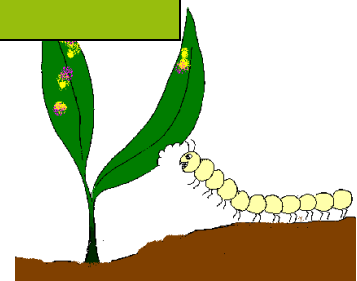
Add together the score for entry, establishment and spread and locate the level of risk.

Entry _____ + establishment _____ + spread _____ = _____

Low	Moderate	High
6 – 9	10 – 13	14 – 18

The **likelihood** of this pest entering, establishing and spreading in Australia is _____
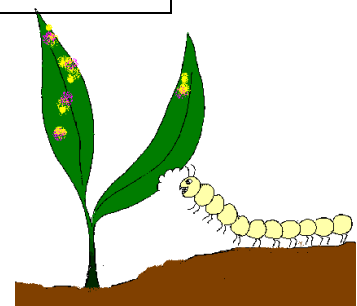
Consequence

Use the tables to assess the possible consequences of your pest or disease establishing in Australia.

Things to think about:

- What crops could be affected by the pest or disease?
- How severe is the impact on the crop?

consequence criteria	Score
The pest or disease	
has a severe impact on the crop or food product, with many host plants dying and/or significant storage losses	3
has a moderate impact on the crop or product with some deaths of the host plants and/or some storage losses	2
has a minor effect on the crop or product, no host plant deaths and/or minor storage losses	1
The pest or disease	
has a wide host range and could affect many different crops, native species and ornamentals	3
has a moderate host range and could affect some crops, native plants and/or ornamentals	2
has a very limited range and will affect only a few varieties of plants	1
Total score for consequence:	

Low	Moderate	High
2	3 – 4	5 – 6

The **consequence** rating is _____

Now use the matrix below and your **likelihood** and **consequence** ratings to determine the risk level of your pest or disease.

		Combined likelihood rating		
		High	**Moderate**	**Low**
Consequence rating	**High**	Very high risk	High risk	Moderate risk
	Moderate	High risk	Moderate risk	Low risk
	Low	Low risk	Low risk	Very low risk

_____(pest/disease name) is rated as a _____ risk pest.

Now what?

Now that you have assessed the risk rating for your pest or disease, teams of biosecurity scientists and policy makers will decide what is to be done.

If a pest is ranked as very high, high or moderate risk, plans will be developed and put in place to prevent the pest from establishing in Australia or to control it if it does establish. These are called Industry Biosecurity Plans (IBPs). Read more about IBPs on the Plant Health Australia website www.planthealthaustralia.com.au.

CRC PLANTbiosecurity