



INTERNATIONAL YEAR OF  
PLANT HEALTH

2020

# Australia's National Priority Plant Pests (NPPP) playing cards: *Beastie the Bug* and

## NOVEL CORONAVIRUS 2019 VERSION

Developed by Carol Quashie-Williams, MSc (Entomology), DIC FRES, STEM Professionals in Schools volunteer,  
Assistant Director, Department of Agriculture, Fisheries and Forestry (DAFF).

Email: [Carol.Quashie-Williams@agriculture.gov.au](mailto:Carol.Quashie-Williams@agriculture.gov.au) &/or [Kalolaqw65@gmail.com](mailto:Kalolaqw65@gmail.com) with any comments.

This STEM (Science, Technology, Engineering and Maths) Professionals in Schools partnership project could not have been achieved without the support of the DAFF staff, Australia's Chief Plant Protection Officer, and research and commitment from Farrer and Mawson Primary Schools Year 6 students and teachers, Ms Kate Elliot (Farrer Primary School) and Mrs Kathryn Glanville (Namadgi Primary School).

### Main sources of references

- CABI Invasive Species Compendium <https://www.cabi.org/ISC>
- National Priority Plant Pests (2019) <https://www.agriculture.gov.au/pests-diseases-weeds/plant/national-priority-plant-pests-2019>
  - Plant pests and diseases <https://www.agriculture.gov.au/pests-diseases-weeds/plant>
  - Bugwood <https://www.bugwood.org/> & <https://www.insectimages.org/index.cfm>
- Beastie the Bug <https://beastiebug.eppo.int/> and <https://gd.eppo.int/taxon/BEASTY> accessed 27 March 2020

# Printing instructions

Print single-sided on A4 paper or card 200-300 gsm:

1. Pages 3-10 playing card fronts (8 pages)
2. Page 11 playing card backs (1 page)
  - copy onto the backs of play cards
3. Page 12-13 playing card box template (1 page)
4. Page 14 NPPP game instructions (1 page)

**A**

# Varroa mite on bee

*Varroa destructor*

RATING 10

COUNTRIES 56

HOSTS 3

Source: Scott Bauer,  
USDA Agricultural Research Service, Bugwood.org**K**

# Giant African snail

*Achatina fulica*

RATING 12

COUNTRIES 73

HOSTS 500



Source: Pest and Diseases Image Library, Bugwood.org

**Q**

# Tomato-potato psyllid

*Bactericera cockerelli*

RATING 13

COUNTRIES 10

HOSTS 14



Source: Pest and Diseases Image Library, Bugwood.org

**J**

# Golden apple snail

*Pomacea canaliculata*

RATING 12

COUNTRIES 26

HOSTS 11



Source: Pest and Diseases Image Library, Bugwood.org

**10**

# Grape phylloxera

*Daktulosphaira vitifoliae*

RATING 35

COUNTRIES 63

HOSTS 4

Source: Phylloxera adults, nymphs and eggs.  
Image courtesy Agriculture Victoria**9**

# Silver leaf whitefly

*Bemisia tabaci*

RATING 40

COUNTRIES 165

HOSTS 44

Source: Scott Bauer,  
USDA Agricultural Research Service, Bugwood.org**8**

# Asian honey bee

*Apis cerana*

RATING 17

COUNTRIES 26

HOSTS 97



Source: Pest and Diseases Image Library, Bugwood.org

**7**

# West Indian dry wood termite

*Cryptotermes brevis*

RATING 25

COUNTRIES 62

HOSTS 25



Source: Pest and Diseases Image Library, Bugwood.org

6



# Formosan subterranean termite

*Coptotermes formosanus*



RATING	29
COUNTRIES	8
HOSTS	12



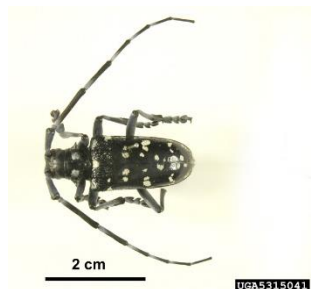
Source: Pest and Diseases Image Library, Bugwood.org

5



# Citrus longicorn beetle

*Anoplophora chinensis*



RATING	34
COUNTRIES	12
HOSTS	92



Source: Pest and Diseases Image Library, Bugwood.org

4



# Japanese sawyer beetle

*Monochamus alternatus*



RATING	33
COUNTRIES	6
HOSTS	32



Source: Pest and Diseases Image Library, Bugwood.org

3



# Fall armyworm

*Spodoptera frugiperda*



RATING	31
COUNTRIES	104
HOSTS	353



Source: South African National Biodiversity Institute

2



# Asian citrus psyllid

*Diaphorina citri*



RATING	6
COUNTRIES	56
HOSTS	8



J  
O  
K  
E  
R



R  
E  
K  
O  
J

Source: Lauren Venugoban

**A****Khapra beetle***Trogoderma granarium*

RATING 2  
 COUNTRIES 34  
 HOSTS 16

♦  
**W**

Source: Pest and Diseases Image Library, Bugwood.org

**K****Oriental fruit fly***Bactrocera dorsalis*

RATING 4  
 COUNTRIES 65  
 HOSTS 300

♦  
**Y**

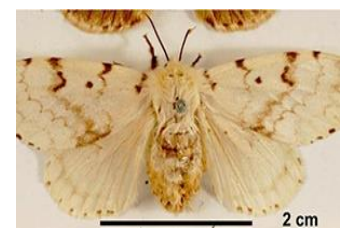
Source: Marja van der Straten, NVWA Plant Protection Service, Bugwood.org

**Q****Spotted wing drosophila***Drosophila suzukii*

RATING 3  
 COUNTRIES 49  
 HOSTS 41

♦  
**O**

Source: John Davis

**J****Asian Gypsy moth***Lymantria dispar asiatica*

RATING 8  
 COUNTRIES 54  
 HOSTS 500

♦  
**P**

Source: Reyes Garcia III, USDA Agricultural Research Service, Bugwood.org

**10****Red imported fire ant***Solenopsis invicta*

RATING 7  
 COUNTRIES 27  
 HOSTS 20

♦  
**O**

Source: Pest and Diseases Image Library, Bugwood.org

**9****Tomato leaf miner***Tuta absoluta*

RATING 20  
 COUNTRIES 95  
 HOSTS 8

♦  
**6**

Source: Marja van der Straten, NVWA Plant Protection Service, Bugwood.org

**8****Brown marmorated stink bug***Halyomorpha halys*

RATING 9  
 COUNTRIES 28  
 HOSTS 100

♦  
**8**

Source: Pest and Diseases Image Library, Bugwood.org

**7****Glassy-winged sharpshooter***Homalodisca vitripennis*

RATING 1  
 COUNTRIES 6  
 HOSTS 3

♦  
**7**

Source: Reyes Garcia III, USDA Agricultural Research Service, Bugwood.org



6

# Serpentine leaf miner

*Liriomyza huidobrensis*



RATING 20  
COUNTRIES 66  
HOSTS 365



9

5

# Hessian fly

*Mayetiola destructor*



RATING 28  
COUNTRIES 37  
HOSTS 3



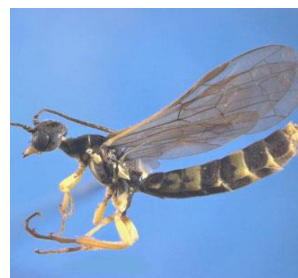
5

Source: Scott Bauer, USDA Agricultural Research Service, Bugwood.org

4

# Wheat stem sawfly

*Cephus cinctus*



RATING 26  
COUNTRIES 4  
HOSTS 10



7

Source: Pest and Diseases Image Library, Bugwood.org

3

# Sugarcane stalk borer

*Chilo infuscatellus*



RATING 36  
COUNTRIES 15  
HOSTS 4



8

Source: Natural History Museum, London

2

# Meadow spittlebug

*Philaenus spumarius*



RATING 1  
COUNTRIES 55  
HOSTS 1000



7

◆

# Beastie the Bug

*Eppotina beastii*



RATING 43\*  
COUNTRIES 35  
HOSTS 2



S  
P  
E  
C  
I  
A  
L

T  
A  
V  
I  
C  
E  
D  
S

Source: Carol Quashie-Williams <https://gd.eppo.int/taxon/BEASTY> & <https://beastiebug.eppo.int/> accessed 26 March 2020 \* Unofficial rating

**A****Xylella***Xylella fastidiosa*

RATING 1  
 COUNTRIES 12  
 HOSTS 350

**W****K****Karnal bunt***Tilletia indica*

RATING 5  
 COUNTRIES 10  
 HOSTS 3

**Y****Q****Huanglongbing***Candidatus Liberibacter asiaticus*

RATING 6  
 COUNTRIES 65  
 HOSTS 10

**O****J****Zebra chip***Candidatus Liberibacter solanacearum*

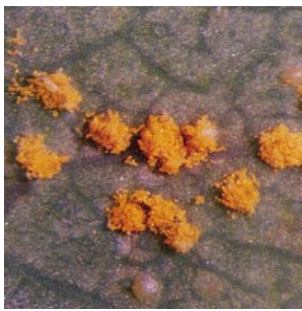
RATING 13  
 COUNTRIES 22  
 HOSTS 7

**P****10****Ug99****Wheat stem rust***Puccinia graminis f. sp. tritici*

RATING 15  
 COUNTRIES 13  
 HOSTS 5

**OL****9****Citrus canker***Xanthomonas citri subsp. citri*

RATING 16  
 COUNTRIES 61  
 HOSTS 29

**6****8****Guava (eucalyptus) rust***Austropuccinia psidii*

RATING 11  
 COUNTRIES 25  
 HOSTS 300

**8****7****Phytophthora blight***Phytophthora kernoviae*

RATING 14  
 COUNTRIES 4  
 HOSTS 17

**L**

6

# Sudden oak death

*Phytophthora ramorum*



RATING 14  
COUNTRIES 19  
HOSTS 73



9

Source: Bruce Moltzan, USDA Forest Service, Bugwood.org

5

# Panama disease Tropical Race 4

*Fusarium oxysporum*  
f. sp. *cubense* Tropical Race 4



RATING 22  
COUNTRIES 89  
HOSTS 14



5

4

# Fire blight

*Erwinia amylovora*



RATING 18  
COUNTRIES 58  
HOSTS 42



7

3

# Texas root rot

*Phymatotrichum omnivorum*



RATING 21  
COUNTRIES 5  
HOSTS 2300



8

Source: The University of Arizona Cooperative Extension

2

# Barley stripe rust

*Puccinia striiformis*  
f. sp. *hordei*



RATING 27  
COUNTRIES 99  
HOSTS 5



7

J

O

K

E

R

R

R

Source: Lauren Venugoban



R

E

K

O

J



**A**

# Sharka

♣ *Plum pox virus (Potyvirus)*



RATING 24  
COUNTRIES 55  
HOSTS 11

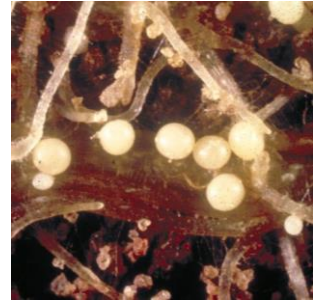
♣  
W

Source: John Hammond, USDA Agricultural Research Service, Bugwood.org

**K**

# Potato cyst nematode (white)

♣ *Globodera pallida*



RATING 19  
COUNTRIES 50  
HOSTS 24

♣  
Y

Source: Central Science Laboratory, Harpenden, British Crown, Bugwood.org

**Q**

# Soybean cyst nematode

♣ *Heterodera glycines*



RATING 23  
COUNTRIES 19  
HOSTS 26

♣  
D

Source: Penn State Department of Plant Pathology & Environmental Microbiology Archives, Penn State University, Bugwood.org

**J**

# Potato late blight

♣ *Phytophthora infestans*



RATING 37  
COUNTRIES 118  
HOSTS 35

♣  
P

**10**

# Aster yellows group

♣ *Phytoplasmas 16Srl group*



RATING 30  
COUNTRIES 40  
HOSTS 249

♣  
OL

Source: Whitney Cranshaw, Colorado State University, Bugwood.org

**9**

# Dutch elm disease

♣ *Ophiostoma novo-ulmi*



RATING 41  
COUNTRIES 42  
HOSTS 11

♣  
6

Source: Pest and Diseases Image Library, www.padil.gov.au

**8**

# Cucumber green mottle mosaic virus

♣ *Tobamovirus*



RATING 32  
COUNTRIES 42  
HOSTS 46

♣  
8

Source: Alberta Agriculture and Forestry

**7**

# Pine wilt nematode

♣ *Bursaphelenchus xylophilus*



RATING 33  
COUNTRIES 9  
HOSTS 57

♣  
L

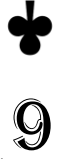
Source: USDA Forest Service - North Central Research Station, USDA Forest Service, Bugwood.org

6

♣ Pine pitch canker  
*Fusarium circinatum*



RATING 38  
COUNTRIES 10  
HOSTS 20



Source: Pest and Diseases Image Library, www.padil.gov.au

5

♣ Grapevine leaf rust  
*Phakopsora euvtis*



RATING 39  
COUNTRIES 20  
HOSTS 17



Source: Pest and Diseases Image Library, www.padil.gov.au

4

♣ Tomato yellow leaf curl virus  
*Begomovirus*



RATING 40  
COUNTRIES 66  
HOSTS 27



Source: Pest and Diseases Image Library, www.padil.gov.au

3

♣ Banana Elephantiasis Disease  
*Candidatus Phytoplasma asteris*



RATING 42  
COUNTRIES 40  
HOSTS 249



Source: Javed Musarrat

2

♣ Tomato brown rugose fruit virus  
*Tobamovirus*

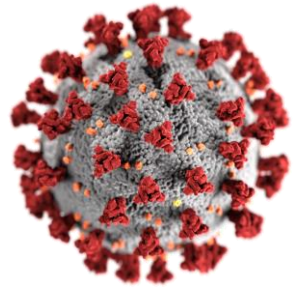


RATING 32  
COUNTRIES 9  
HOSTS 2



Source: Salvatore Davino, EPPD

Novel Coronavirus Disease 2019 (COVID-19)  
*Novel Coronavirus*



RATING\* 1  
COUNTRIES\*\* 213  
HOSTS\*\*\* 3

L  
A  
V  
I  
C  
E  
D  
S  
♣

Source: CDC / Alissa Eckert, MS; Dan Higgins, MAM  
<https://phil.cdc.gov/Details.aspx?pid=23311>  
\*Unofficial rating \*\* WHO-Countries, areas or territories with cases,  
\*\*\* Zhang et al 2020, (Humans, bats and pangolin!) Accessed 29 April 2020



## Australia's National Priority Plant Pests



## Australia's National Priority Plant Pests



## Australia's National Priority Plant Pests



## Australia's National Priority Plant Pests



## Australia's National Priority Plant Pests



## Australia's National Priority Plant Pests



## Australia's National Priority Plant Pests



## Australia's National Priority Plant Pests

www.agriculture.gov.au/pests-diseases-weeds/plant/national-priority-plant-pests-2019

## Australia's National Priority Plant Pests

Australia is lucky to be free from many of the world's most damaging plant pests. The National Priority Plant Pests are capable of damaging our natural environment, destroying our food production and agriculture industries, and some could change our way of life. These playing cards promote and raise awareness of Australia's National Priority Plant Pests and the International Year of Plant Health 'Protecting plants, protecting life'. The cards include information on the National Priority Plant Pests (NPPP) ratings, the most important being No. 1 Xylella, plus information on the number of countries each pest is found in and the number of plant hosts the pest infests or feeds on, as researched by students from Farrer and Mawson Primary Schools as part of a STEM (Science, Technology, Engineering and Mathematics) Professionals in Schools project.

### INSTRUCTIONS - NPPP GAME 2-6 Players.

Shuffle and deal out all the cards including the Jokers face down to the players. Players turn over their top card and the dealer reads out the pest name on the card then selects a category of Rating, Countries or Hosts and reads out the number for the category. All the other players read out their pest name and number for the chosen category. Depending on the category selected, the winner of the hand is the player with the lowest Rating, or highest number of Countries or highest number of Hosts or the player with the Joker card (Joker 'trumps' or beats all other categories). If there is a tie, another card is selected by the tying players and they read out the number for the same category. The winner of the hand then collects all the cards on the table, except the Joker card and places them face down under their card pile-LONG game (or face up on the table-SHORT game).

The winner then turns over the next top card and selects a category. The winner of the next hand collects all the cards on the table including the Joker card. The winner of the game is the player with the most cards.

www.agriculture.gov.au/pests-diseases-weeds/plant



INTERNATIONAL YEAR OF  
PLANT HEALTH  
2020

## Australia's National Priority Plant Pests

(COVID-19 & Beastie Bug edition)

Australia's National  
Priority Plant Pests

Shallower box

Adapted from:

<https://www.template.net/design-templates/box-templates/playing-card-box-template/>



MINI BOX  
(when 2 sheets  
printed per A4)

## Australia's National Priority Plant Pests

Australia is lucky to be free from many of the world's most damaging plant pests. The National Priority Plant Pests are capable of damaging our natural environment, destroying our food production and agriculture industries, and some could change our way of life. These playing cards promote and raise awareness of Australia's National Priority Plant Pests and the International Year of Plant Health 'Protecting plants, protecting life'. The cards include information on the National Priority Plant Pests (NPPP) ratings, the most important being No. 1 Xylella, plus information on the number of countries each pest is found in and the number of plant hosts the pest infests or feeds on, as researched by students from Farrer and Mawson Primary Schools as part of a STEM (Science, Technology, Engineering and Mathematics) Professionals in Schools project.

### INSTRUCTIONS - NPPP GAME 2-6 Players.

Shuffle and deal out all the cards including the Jokers face down to the players. Players turn over their top card and the dealer reads out the pest name on the card then selects a category of Rating, Countries or Hosts and reads out the number for the category. All the other players read out their pest name and number for the chosen category. Depending on the category selected, the winner of the hand is the player with the lowest Rating, or highest number of Countries or highest number of Hosts or the player with the Joker card (Joker 'trumps' or beats all other categories). If there is a tie, another card is selected by the tying players and they read out the number for the same category. The winner of the hand then collects all the cards on the table, except the Joker card and places them face down under their card pile-LONG game (or face up on the table-SHORT game). The winner then turns over the next top card and selects a category. The winner of the next hand collects all the cards on the table including the Joker card. The winner of the game is the player with the most cards.

www.agriculture.gov.au/pests-diseases-  
weeds/plant/national-priority-plant-pests-2019

www.agriculture.gov.au/pests-diseases-weeds/plant



## Australia's National Priority Plant Pests

## Australia's National Priority Plant Pests

Adapted from:  
<https://www.template.net/design-templates/box-templates/playing-card-box-template/>  
Shallower box

# INSTRUCTIONS

## National Priority Plant Pests (NPPP) Game *Version 3: Beastie the Bug and COVID-19*

For 2-6 Players

- Shuffle and deal out all the cards including the Jokers face down to the players.
- Players pick up the cards but don't look at their cards.
- Players turn over their top card and the dealer reads out the pest name on the card then selects a category of Rating, Countries or Hosts and reads out the number for the category and puts the card on the table.
- All the other players read out their pest name and number for the chosen category and put their cards on the table.
- Depending on the category selected, the winner of the hand is the player with the lowest Rating, or highest number of Countries or highest number of Hosts or the player with the Joker card (Joker 'trumps' or beats all other categories).
  - If there is a tie, another card is selected by the tying players and they read out the number for the same category.
- The winner of the hand then collects all the cards on the table, except the Joker card (who has to stay in the 'field' to check the next lot of pests!) and places them face down under their card pile-LONG game (or face up on the table-SHORT game). The winner then turns over the next top card and selects a category.
  - The winner of the next hand collects all the cards on the table including the Joker card and places them face down under their card pile-LONG game (or face up on the table-SHORT game). The winner then turns over the next top card and selects a category.
- The winner of the game is the player with the most cards in their pile (LONG game) or face up on the table (SHORT game ).

Hope you enjoy playing Australia's NPPP game, if you have any comments or suggestions (especially for the topic for the next set of cards), please email me [Carol.Quashie-Williams@awe.gov.au](mailto:Carol.Quashie-Williams@awe.gov.au)