





## Pests and Diseases in the Plantation Forestry Industry

### Case Studies:

<b>Pest: European gypsy moth</b> <i>Lymantria dispar dispar</i>	
<b>Disease: Pine pitch canker</b> <i>Fusarium circinatum</i>	

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### Teacher Overview

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Students will gain an understanding about one pest and disease that pose a serious threat to the forestry industry in Australia.

#### Students will

- complete a research case study of one pest and one disease that has been identified as a significant concern to the industry. Links have been provided to assist students with their research outlines.
- have the opportunity to complete a glossary of terms related to their case studies.

### Stage

Year 11 Agriculture



## Syllabus Links

### Outcomes

#### A student:

P2.1 describes the biological and physical resources and applies the processes that cause changes in plant production systems

#### Students learn about:

- The nature and impact on plant production systems of microbes, invertebrates and pests.

#### Students learn to:

- Outline one important disease and one pest for a selected crop/pasture.
- Evaluate methods that can be used to control or prevent plant pests and diseases.

## Lesson Overview

### Introduction (5 minutes):

Students will initially be introduced to the terms of “prevention and control” and gain an understanding of the difference of these terms.

### Activity One (Approx 25 minutes):

Students will complete a case study on the pest European gypsy moth. A template has been provided to record their research and this should be either printed prior to the lesson or students can complete it in an electronic Word document form. Students may wish to visit alternative sites to complete their research, however, the two links are appropriate to find the required information.

1. Gypsy Moth Fact Sheet - <http://www.planthealthaustralia.com.au/wp-content/uploads/2015/07/Gypsy-moth-FS-Plantation-forestry.pdf>
2. Gypsy Moth Contingency Plan - <http://www.planthealthaustralia.com.au/wp-content/uploads/2013/03/Gypsy-moth-CP-2009.pdf>

N.B: The relevant section for management of the disease is in Section 5.3.



**N.B:** The contingency plan document (link 2) is very detailed. It is recommended that you scroll and scan through the document with your students in order for them to gain an understanding of what sort of information is provided to stakeholders in the plant industry in Australia. They can then focus on section 5.3 for their management responses.

### Activity Two (Approx 25 minutes):

Students will complete a case study on the disease Pine pitch canker. A template has been provided to record their research and this should be either printed prior to the lesson or students can complete it in an electronic Word document form. Students may wish to visit alternative sites to complete their research, however the two links are appropriate to find the required information.

1. Pine pitch canker Fact Sheet - <http://www.planthealthaustralia.com.au/wp-content/uploads/2015/07/Pine-pitch-canker-FS.pdf>
2. Integrated pest management of Pine canker (California university) - <http://ipm.ucanr.edu/PMG/PESTNOTES/pn74107.html>

### Activity Three (Approx 10 minutes):

During their case studies, students will have researched a number of new terms. Individuals should spend time researching the provided definitions and any other terms they were unfamiliar with during their research.

## Resources

- a) Student worksheet and templates for case study one and two.
- b) Online Sources (links provided on the worksheet).
- c) Sample answers to case studies attached.



## Sample Answers

### Activity One

Linked on website: Answers European gypsy moth

### Activity Two

Linked on Website: Answers Pine pitch canker

### Activity Three

Complete the following table of terms;

Term	Definition <b>(will vary depending on student research/source)</b>
Stem girdling	A stem girdling root is a type of dysfunctional root that is growing against a tree's stem. Viewed 30 <sup>th</sup> April 2017 <a href="http://www.myminnesotawoods.umn.edu/2009/01/stem-girdling-roots-booklet/">www.myminnesotawoods.umn.edu/2009/01/stem-girdling-roots-booklet/</a>
Dieback	A condition in which a tree or shrub begins to die from the tip of its leaves or roots backwards, owing to disease or an unfavourable environment. Viewed 30 <sup>th</sup> April 2017 <a href="http://www.dictionary.com/browse/dieback">http://www.dictionary.com/browse/dieback</a>
Crown	The crown of a woody plant (tree, shrub, liana) is the branches, leaves, and reproductive structures extending from the trunk or main stems. Viewed 30 <sup>th</sup> April 2017 <a href="https://en.wikipedia.org/wiki/Crown_(botany)">https://en.wikipedia.org/wiki/Crown_(botany)</a>
Resin	Secreted from certain plants (a.k.a. resinous plants), most commonly trees, and most commonly coniferous trees such as pine trees. Viewed 30 <sup>th</sup> April 2017 <a href="http://tccpermaculture.com/site/2014/08/04/tapping-the-pine-tree-plant-resins-and-their-uses/">tccpermaculture.com/site/2014/08/04/tapping-the-pine-tree-plant-resins-and-their-uses/</a>
Lesions	Any localised, defined area of diseased tissue, as a spot, canker, blister, or scab. Viewed 30 <sup>th</sup> April 2017 <a href="http://www.dictionary.com/browse/lesion">http://www.dictionary.com/browse/lesion</a>



Sporodochia	<p>A small, compact stroma (mass of hyphae) usually formed on host plants parasitised by fungi.</p> <p>Viewed 30<sup>th</sup> April 2017  <a href="https://en.wikipedia.org/wiki/Sporodochium">https://en.wikipedia.org/wiki/Sporodochium</a></p>
Instars	<p>A stage of an insect or other arthropod between one molt and the next.</p> <p>Viewed 30<sup>th</sup> April 2017  <a href="http://www.thefreedictionary.com/instars">http://www.thefreedictionary.com/instars</a></p>
Broad spectrum insecticides	<p>When using broad-spectrum pesticides, the chemical can harm both pests and non-pest organisms.</p> <p>Viewed 30<sup>th</sup> April 2017  <a href="http://study.com/academy/lesson/what-are-pesticides-definition-and-difference-between-narrow-spectrum-broad-spectrum.html">http://study.com/academy/lesson/what-are-pesticides-definition-and-difference-between-narrow-spectrum-broad-spectrum.html</a></p>
Silviculture	<p>Silviculture is the practice of controlling the establishment, growth, composition, health, and quality of forests to meet diverse needs and values.</p> <p>Viewed 30<sup>th</sup> April 2017  <a href="https://en.wikipedia.org/wiki/Silviculture">https://en.wikipedia.org/wiki/Silviculture</a></p>

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