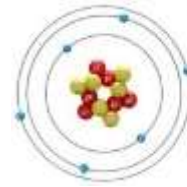




## Forestry and carbon sequestration



### Outcomes

#### A student:

- P2.1 describes the biological and physical resources and applies the processes that cause changes in plant production systems
- P4.1 applies the principles and procedures of experimental design and agricultural research

#### Students learn about:

- Recent research findings that contribute to plant production systems

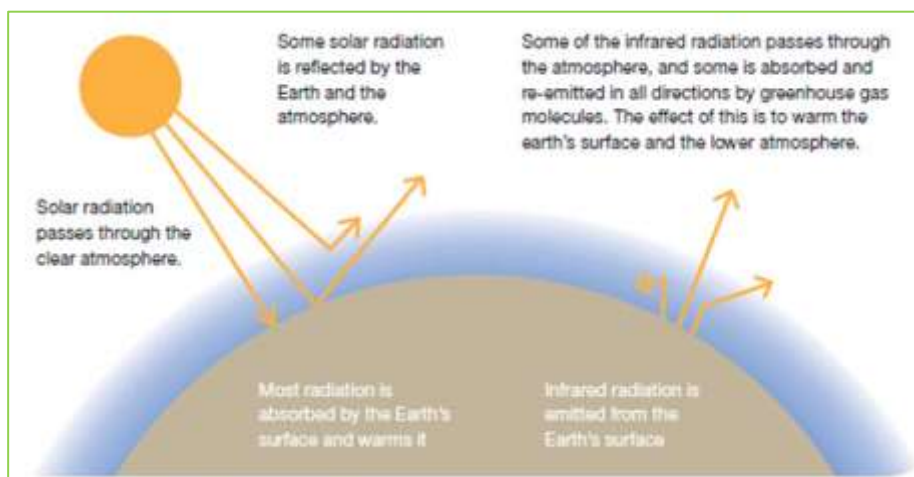
#### Students learn to:

- Use a range of sources to gather information about a specific agricultural problem or situation in plant production systems.

## Introduction -

### The greenhouse effect and climate change

The natural process of the greenhouse effect keeps the Earth warm by minimising the loss of heat from the Earth into space. It supports life on our planet.





The issue that is causing significant concern is the *increased* release of greenhouse gases into the atmosphere. This increase is linked to human activity and therefore the agricultural industry needs to assess its practices and contribution to this situation. Agriculture is currently believed to contribute 12% of Australia's greenhouse gas emissions (Brown et. al 2015).

Significant research is being centred around climate change on a global level. Increased frequency of unpredictable weather patterns, variable temperatures and uncertain effects to plant and animal growth are all issues that need to be researched, assessed and acted on. Agriculture will need to continue maintain the supply of food and fibre to an increasing population in these unpredictable circumstances, but hopefully should also be looking to mitigate some of the increases in these problematic greenhouse gases.

## **Carbon sequestration and storage**

Some agricultural practices release carbon dioxide into the atmosphere, including land clearing, stubble burning and the use of machinery for harvest. Other practices can assist in removing and storing carbon dioxide including agroforestry, native and plantation forestry, revegetation of land and stubble retention.

### **Definitions:**

**Carbon sequestration** is that rate at which trees absorb carbon as they grow.

**Carbon storage** is the measurement of the total amount of carbon that can potentially be stored in a forest.



## STORING CARBON FOR THE LONG TERM

Not only is carbon absorbed by trees, it is also stored in timber and wood products long after the trees are harvested. The combined effect of net annual sequestration of carbon in sustainably managed State forests, combined with the carbon stored in the wood products they produce, is equivalent to taking more than 230 thousand cars a year off the road.

Sustainable  
management  
of State forests



Forest  
products



Store the  
equivalent of  
the greenhouse  
gas emissions  
produced by  
**230 thousand  
cars**

### Researching the “Situation/Problem”.

**TASK:** Gather information about forests sequestering and storing carbon.

In this lesson your focus is to research the above component of the greenhouse effect and climate change situation/problem. If specific agricultural practices can assist in carbon sequestration and storage as well as continuing to supply food/fibre and create a profit, then these practices are likely to have a positive future.



### Activity One – Graphing task

In the space provided, follow the link and transform the tree graph into an alternative graph type (pie, column etc) detailing where carbon is allocated within a plant.

Where the carbon goes -

<https://rsv.org.au/events/accounting-carbon-storage-trees/>

Graphic attribution: **Associate Professor Brad Potter**, The University of Melbourne and **Professor Ian Woodrow**, The University of Melbourne



## Activity Two – 3-point data collection

You are required to gather information about carbon sequestration and storage from a range of sources. Some sources have been provided for you in this worksheet, others you will need to collect yourselves or as part of a group. The task is to select the 3 most important points in each of the sources regarding to the relationship between forests and carbon and record them in Table 2 or one of your own.

Your points could include information pertaining to:

- scientifically how a plant sequesters and stores carbon;
- data on how much carbon can be used and absorbed in an individual tree or forest;
- comparisons of different forest types and species, ages of forests etc;
- what products are the carbon stores of forestry;
- data relating to rates of sequestration and storage.

**Table 1**

Source Number	Source	Source Type
1	<a href="#">Trees, timber and carbon storage.</a>	Forestry Corporation sponsored website
2	<a href="#">Going Bush 2 - Episode 2 - Carbon</a> (4.22)	Multimedia
3	<a href="#">Going Bush 3 - Episode 2 - Carbon storage in buildings</a> (view until 4.47)	Multimedia
4	<a href="#">Which plants store more carbon in Australia: forests or grasses?</a>	Research journal abstract
5	<a href="http://timbernsw.com.au/timber-in-the-carbon-economy/">http://timbernsw.com.au/timber-in-the-carbon-economy/</a>	Timber NSW website
6	<a href="#">How is carbon stored in trees and wood products?</a>	ForestLearning student activity
7	Student choice	Must be a different type than above.



Table 2:

Source number	Source type	3 main points
1	website	
2	multimedia	
3	multimedia	
4	Research journal abstract	
5	website	
6	Student lesson	
7		





### Activity Three – group poster

In pairs, compare the list of points that you have collected from your sources. Using a range of points from a range of sources, create an educational poster that could be displayed at your school to highlight some of the main points regarding forests and carbon. Add any relevant diagrams/pictures and photos.

*Visit the following link for an example of a poster - [Forestry Corporation carbon diagram](http://www.forestrycorporation.com.au/__data/assets/pdf_file/0009/437733/forests-carbon-cycle.pdf) - [www.forestrycorporation.com.au/\\_\\_data/assets/pdf\\_file/0009/437733/forests-carbon-cycle.pdf](http://www.forestrycorporation.com.au/__data/assets/pdf_file/0009/437733/forests-carbon-cycle.pdf)*



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2. The Greenhouse effect viewed 22<sup>nd</sup> April 2017  
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6. Where the carbon goes. Viewed 22<sup>nd</sup> April 2017  
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