Wood Conversion

Learning Objectives

- To understand the need for wood conversion.
- To be able to explain the term wood conversion.
- To be able to identify the various methods of conversion.
- To be able to compare the advantages and disadvantages of the various methods.

Felling

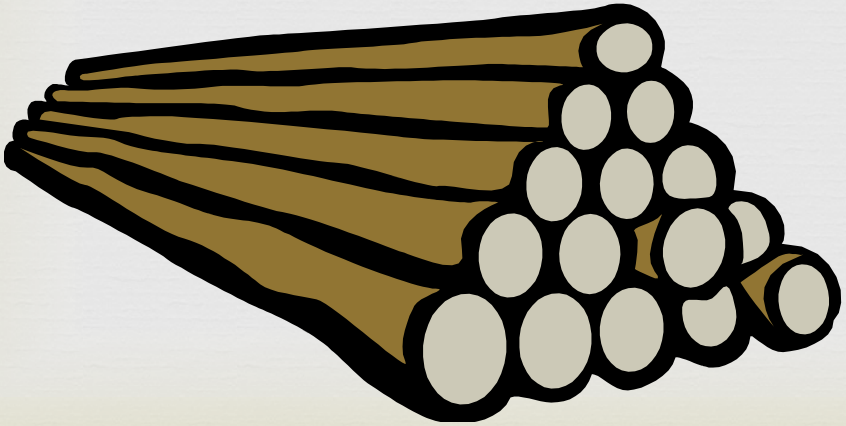
- Felling is the term used to describe the cutting down and harvesting of trees.
- Clear felling means the cutting down of all tress in an area

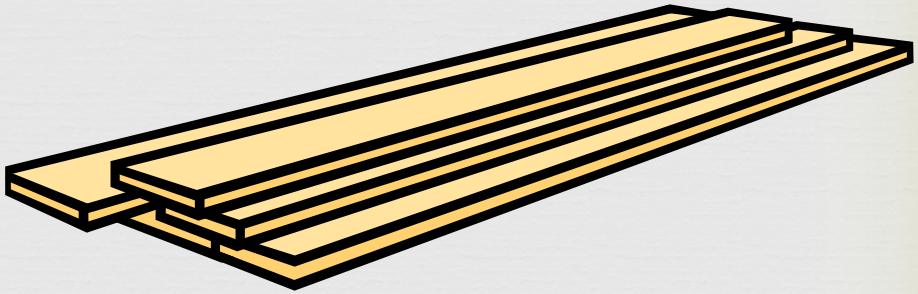
Winter is the best season to fell trees for a number of reasons;

- Less foliage (leaves) on the trees
- Less moisture in the wood – as the tree it stops growing

What is wood conversion?

- Wood Conversion is the cutting of logs into planks of wood
- Logs are converted for three main reasons
  1. To reduce the wood to a workable size
  2. Small planks are easier to dry out than large logs
  3. Allow the quality of the timber to be seen (knots etc)

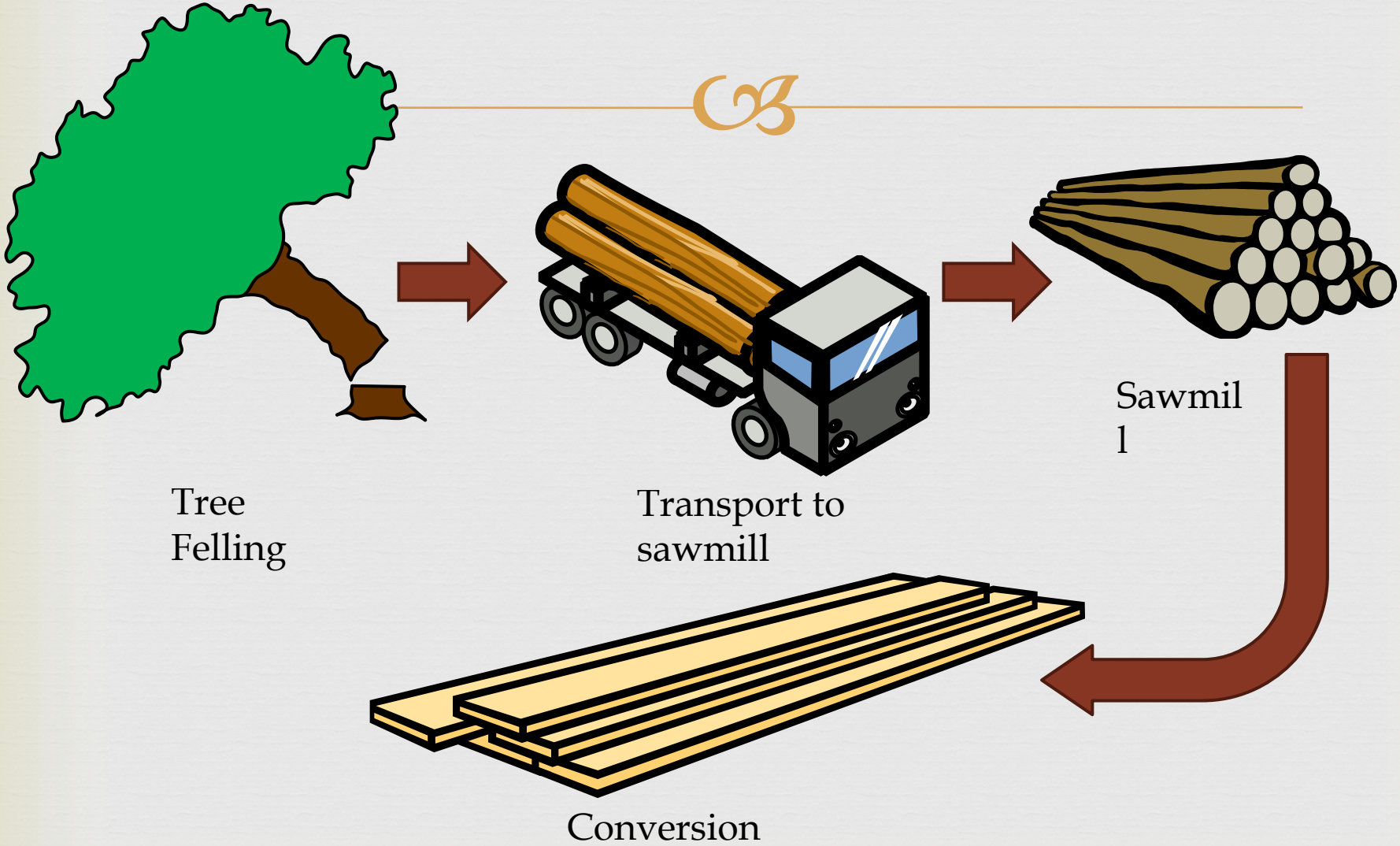




Transport and waste

- Trees are transported to a saw mill (tractors/lorries, the river, trains and sometimes horses are used)
- Branches and bark are removed and used to man manufactured (man-made) boards and bark mulch in gardens

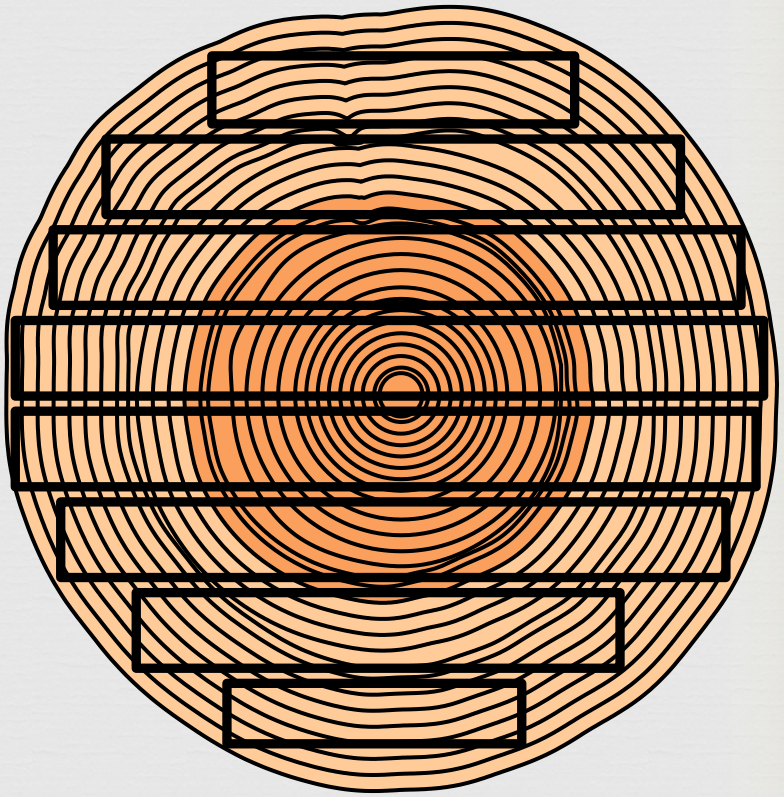
The conversion process



- After these stages there are three ways that logs are converted:
  - Through and through method
  - Quarter sawn
  - Tangential sawn

Through and Through Sawing

- This method involves taking parallel cuts through the log
- Heartwood and sapwood are not separated
- Timber cut this way is used for
  - Garden Furniture
  - Fencing Posts
  - Pallets



Through and Through Sawing

Advantages

- Very cheap method
- Very fast method
- Very little waste produced

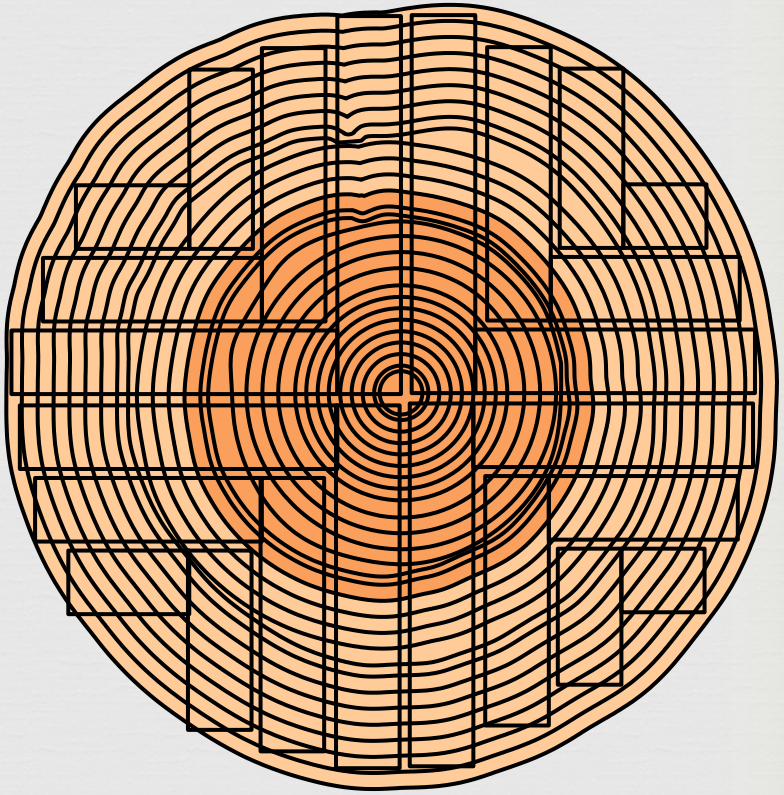
Disadvantages

- Planks contain heartwood and sapwood
- Planks are not very strong
- Planks are prone to warp, cup, split and twist
- No distinctive grain pattern

Through and Through

Quarter Sawing

- In this conversion method the log is cut into quarters
- This requires a lot of turning of the log
- Heartwood and sapwood can be separated using this method
- This method is used on hardwoods
- It shows silver grain in oak
- Timber cut this way is used for floorboards and furniture.



Quarter Sawing

Advantages

- The planks are very strong
- The planks are very hard wearing
- It exposes and attractive grain pattern
  - Silver grain in Oak

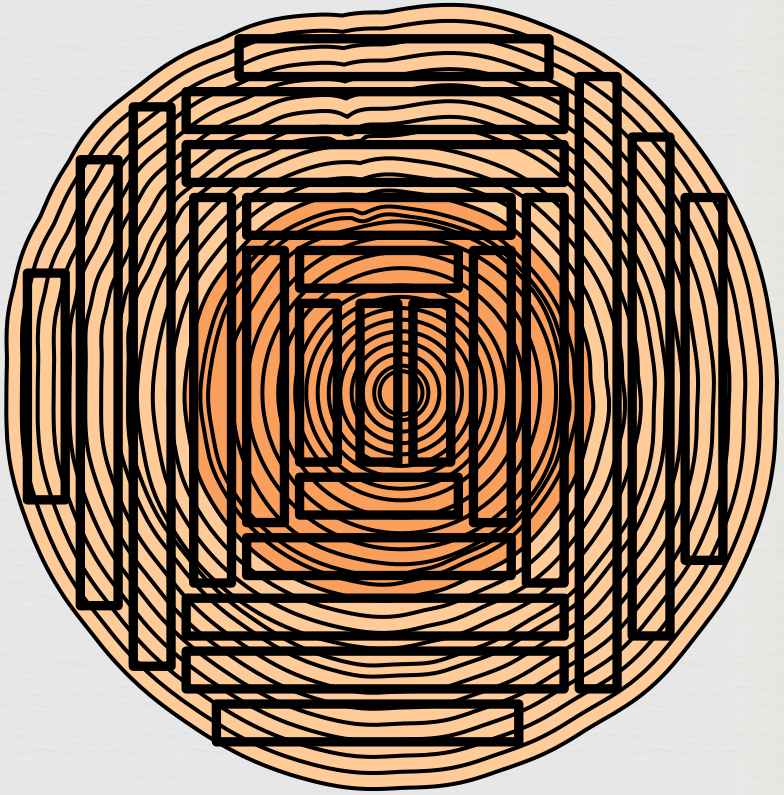
Disadvantages

- Is a very expensive method
- A lot of waste is generated
- Planks tend to be narrow

Quarter Sawing

Tangential Sawing

- In this conversion method the cut is made tangential to the annual rings
  - ***This requires a lot of turning of the log**
- Heartwood and Sapwood are separated using this method.
- Timber from this conversion method is used for furniture and veneers.



Tangential Sawing

Advantages

- The planks are very strong
- The planks have an attractive grain pattern (Flame figure)
- Heartwood and Sapwood are separated

Disadvantages

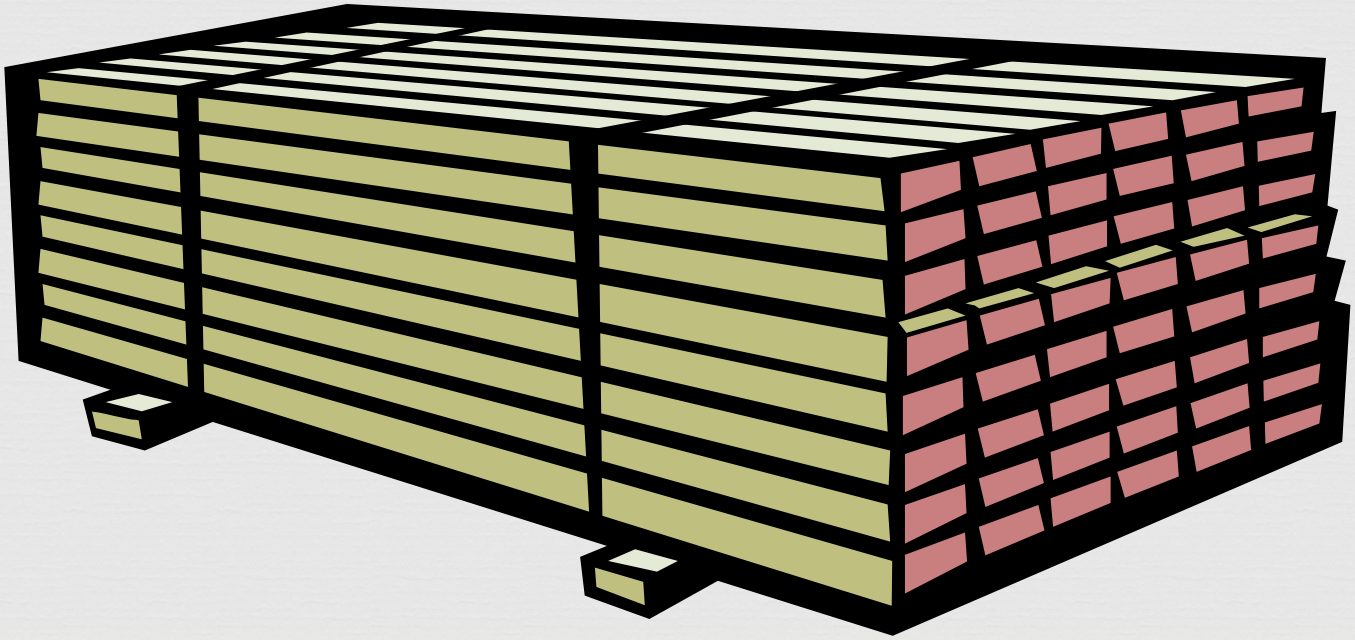
- The planks are prone to swelling and shrinking
- Costly and slow
- Lots of waste

Waste products

- The waste produced from converting logs to timber can be reused
- Sawdust: Used to make MDF
- Bark: Used for flower beds
- Small strips of wood: Burnt to heat the sawmill

What's next?

- The timber is stacked on a trolley and brought to a kiln to be seasoned.



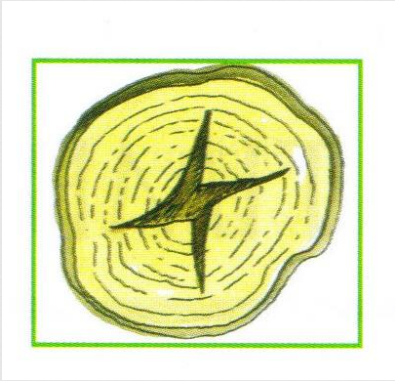
Defects associated with Felling & Conversion!!

Felling Defects- Shakes

- Cracks or splits in the wood are called shakes

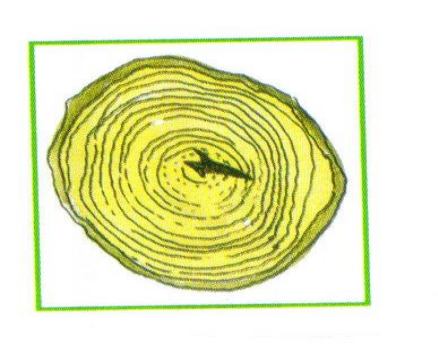
Types of Shakes

1. Heart and Star shakes



- Deep, wide cracks which radiate out from the centre of the log

- Caused by shrinkage through old age or by too rapid drying after felling



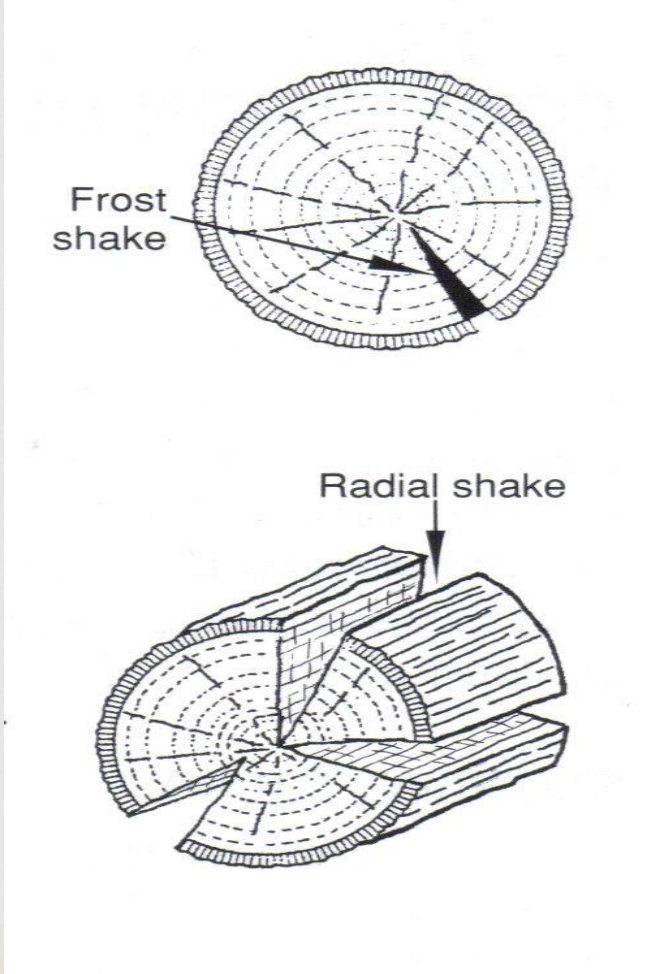
Felling Defects- Shakes

Frost shake

- This is where the wood splits inwards towards the centre and is caused by very cold weather

Radial shakes

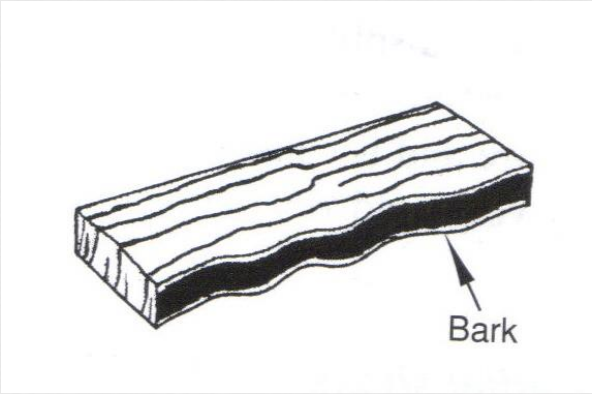
- A split along the outside of the wood caused by rapid drying (shrinkage) of the log before conversion



Conversion Defects

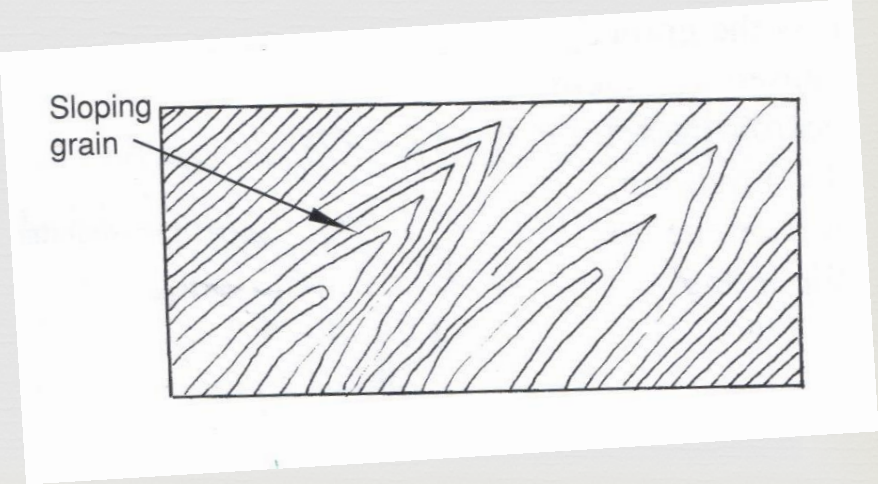
Waney Edge

- Occurs when the bark is left on during conversion



Sloping grain/short grain

- Grain does not run parallel to the edge of the board because of bad conversion
  - seriously weakens the timber



Video Links

- Felling= 8min

http://www.youtube.com/watch?v=-57xOdPWX9E

- Conversion = 3 ½ min

http://www.youtube.com/watch?annotation_id=annotation_508088&feature=iv&src_vid=bqP-d_8Zahg&v=PB3-ekIW2EY