
Managing risk

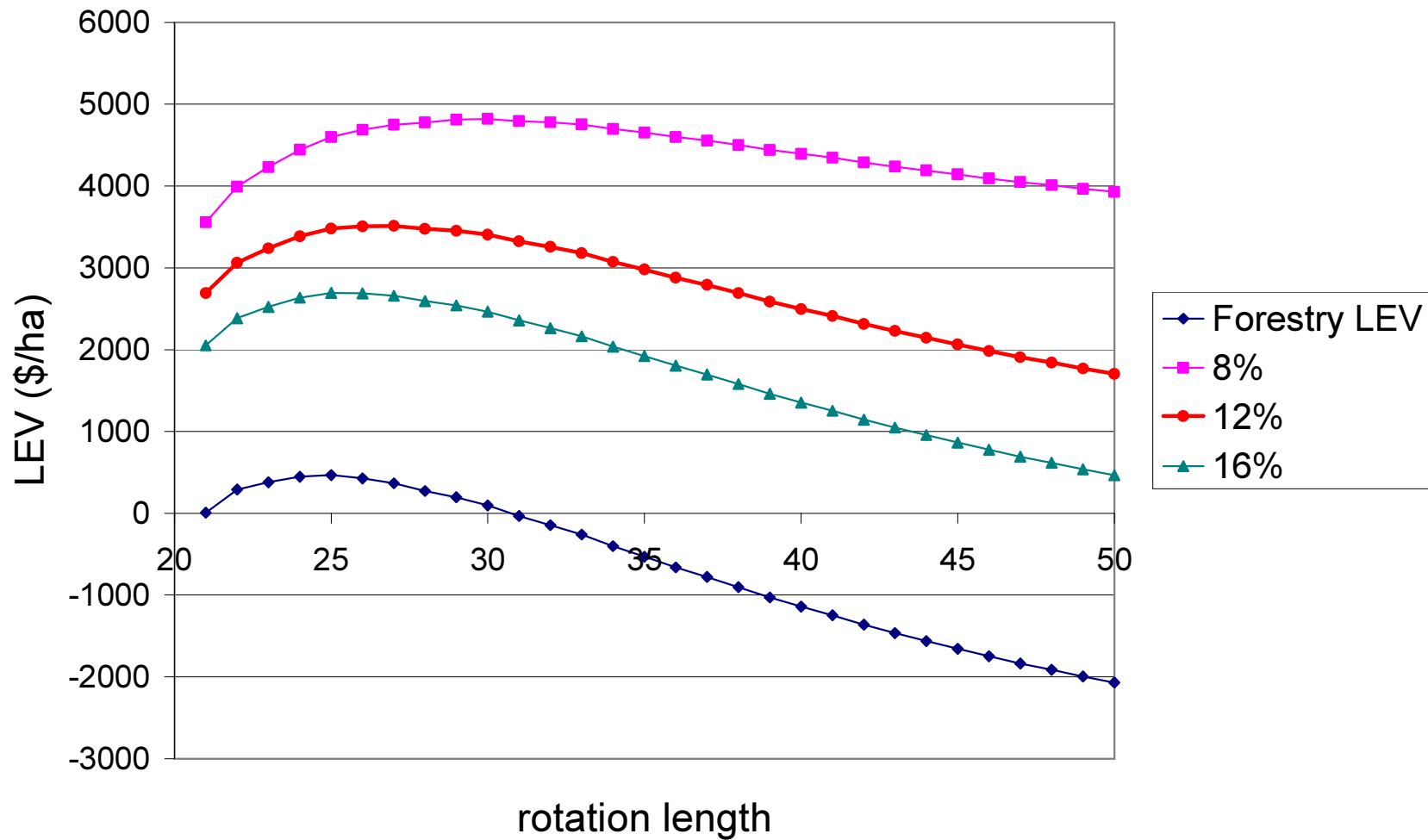
What are the risks?

- Political risk
 - ETS ceases
- Premature surrender of carbon after catastrophic event
- Carbon price risk on harvest

How to deal with the risk?

- Could use a higher discount rate for carbon cashflows

Use a higher discount rate for carbon cashflows?

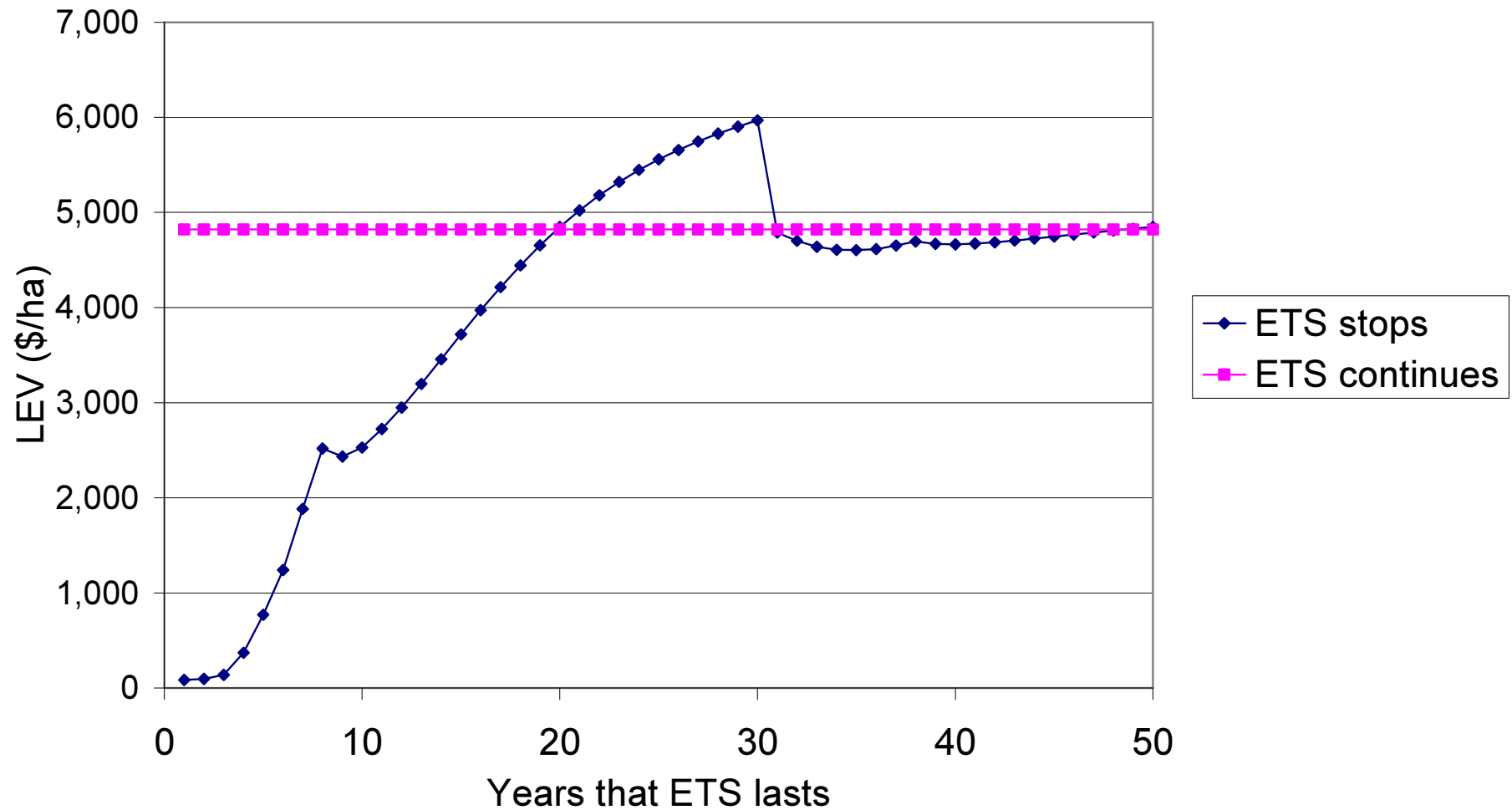


Higher discount rate for carbon

- Have greater uncertainty about carbon trading business than forestry business
- May be reflected in a higher discount rate for carbon
- Ideally adjust cashflows to allow for risk
 - Difficult given the infancy of carbon trading
- Only adjust discount rate for risk that cannot be included in cashflows
 - Beware of effects

What if the
ETS ceases?

LEV if the ETS only lasts a short time



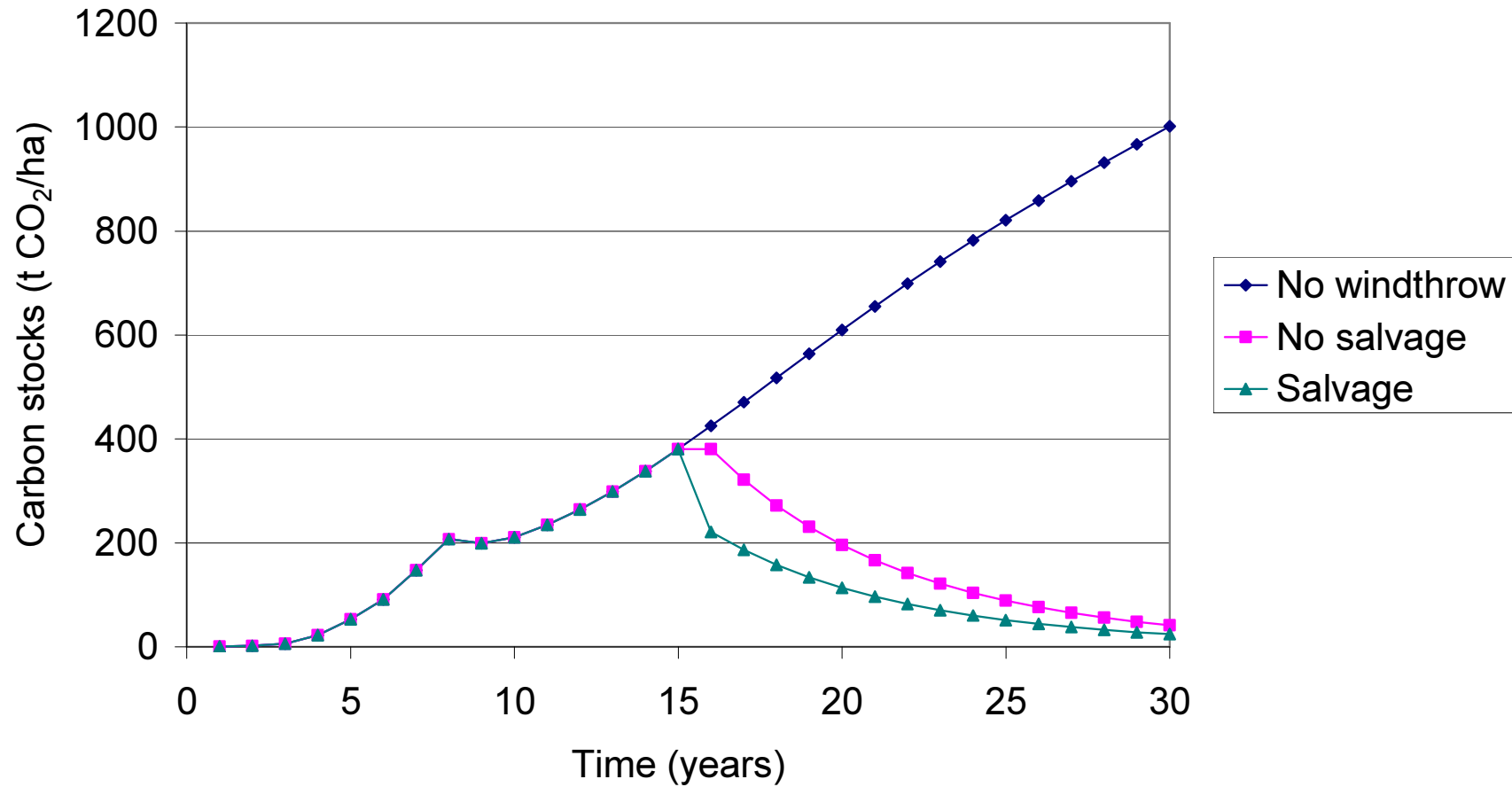
What if crop is burnt
or blown down?

What if crop is burnt or blown down?

- Instant oxidation rule applies to salvage
- Decay rule for residues left on site
- This may influence the salvage strategy
 - The ETS provides a disincentive to recover low value wood.

Example – Stand blown over at age 15

Effect of windthrow on carbon stocks

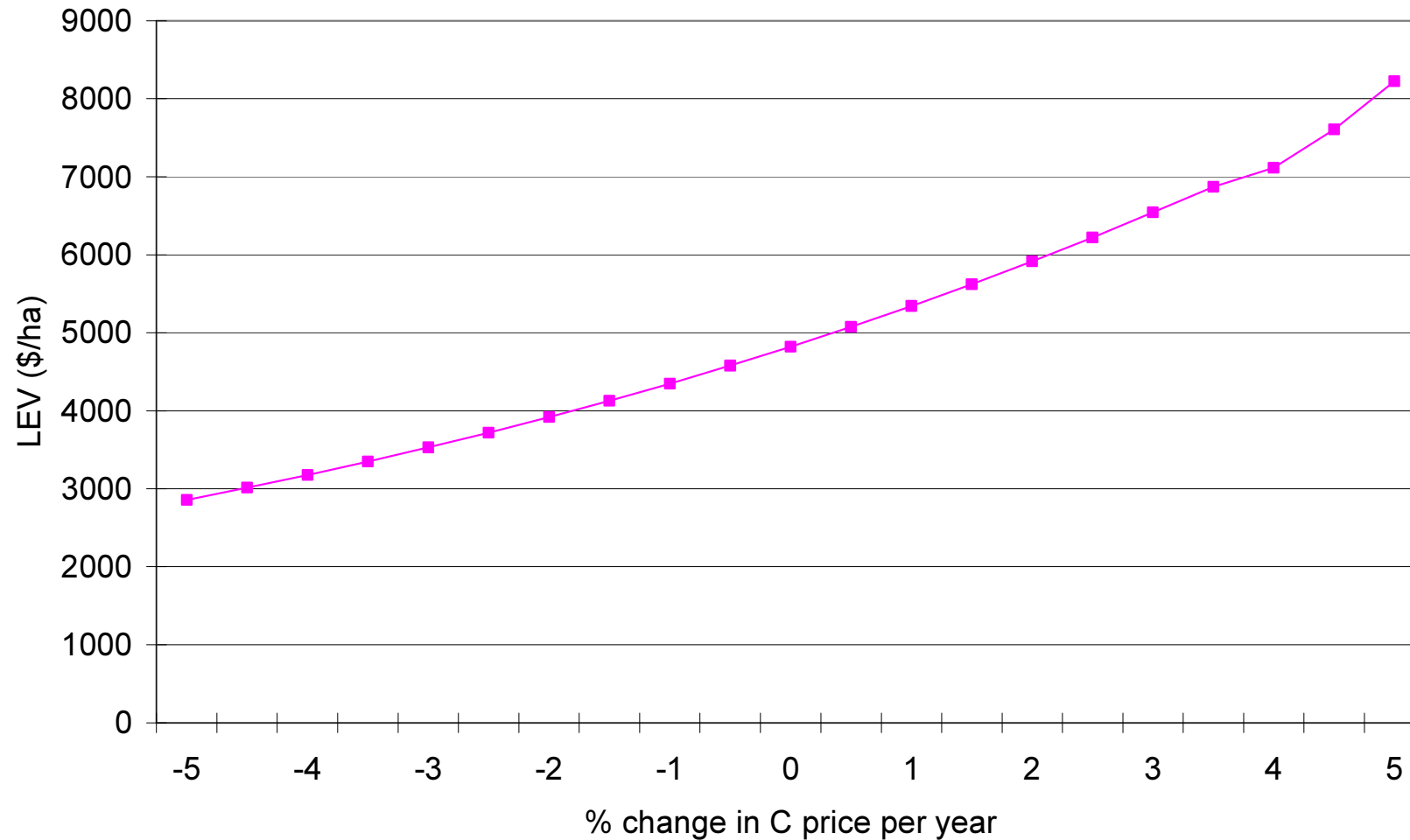


Insurance

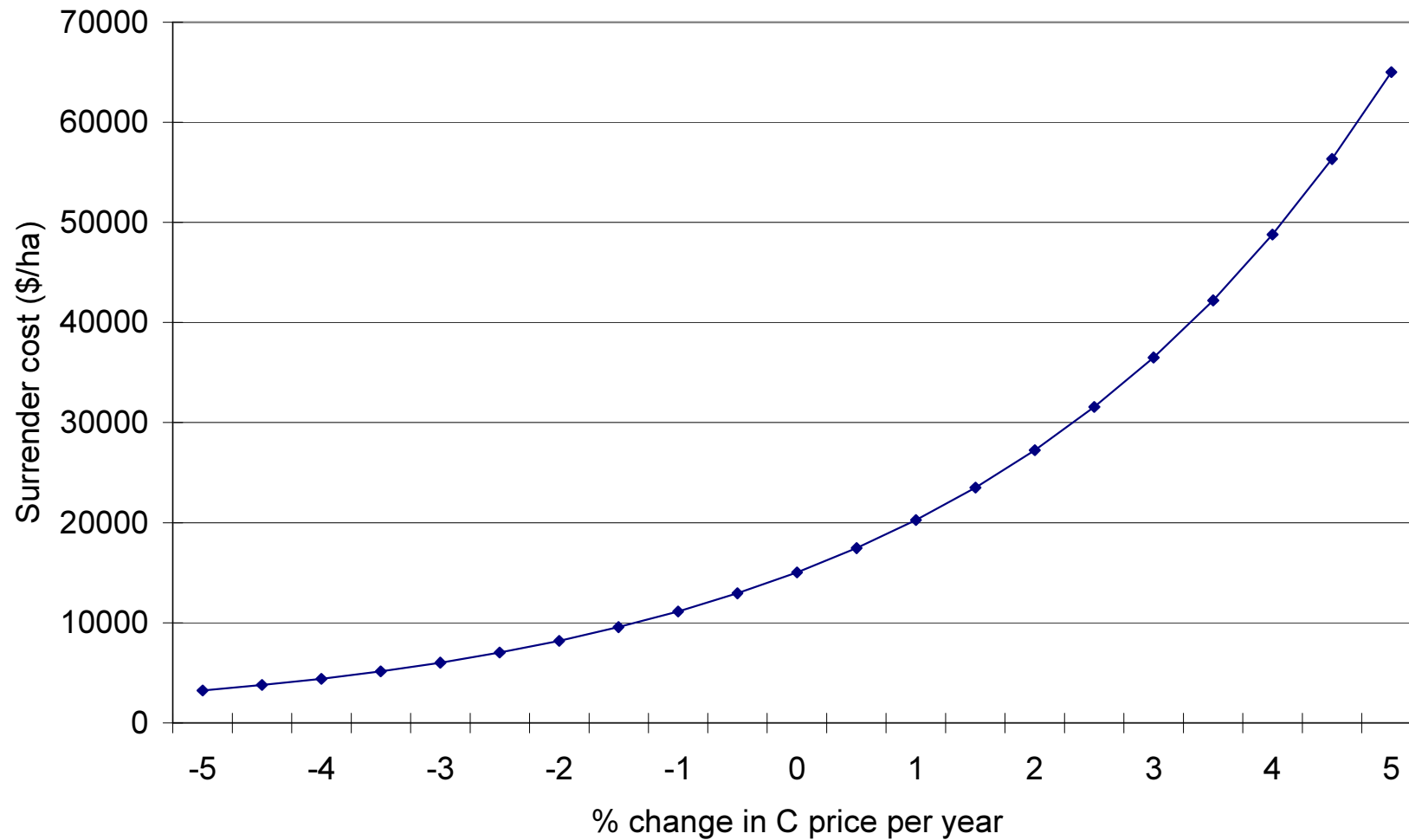
- Can now insure against early surrender of carbon
 - As well as the loss of the tree crop
- But cost may be prohibitive
 - Particularly to cover against windthrow

What if carbon price
changes?

Impact of carbon price changing on LEV



Impact of carbon price changing on surrender cost (surrender 752 units after harvest)



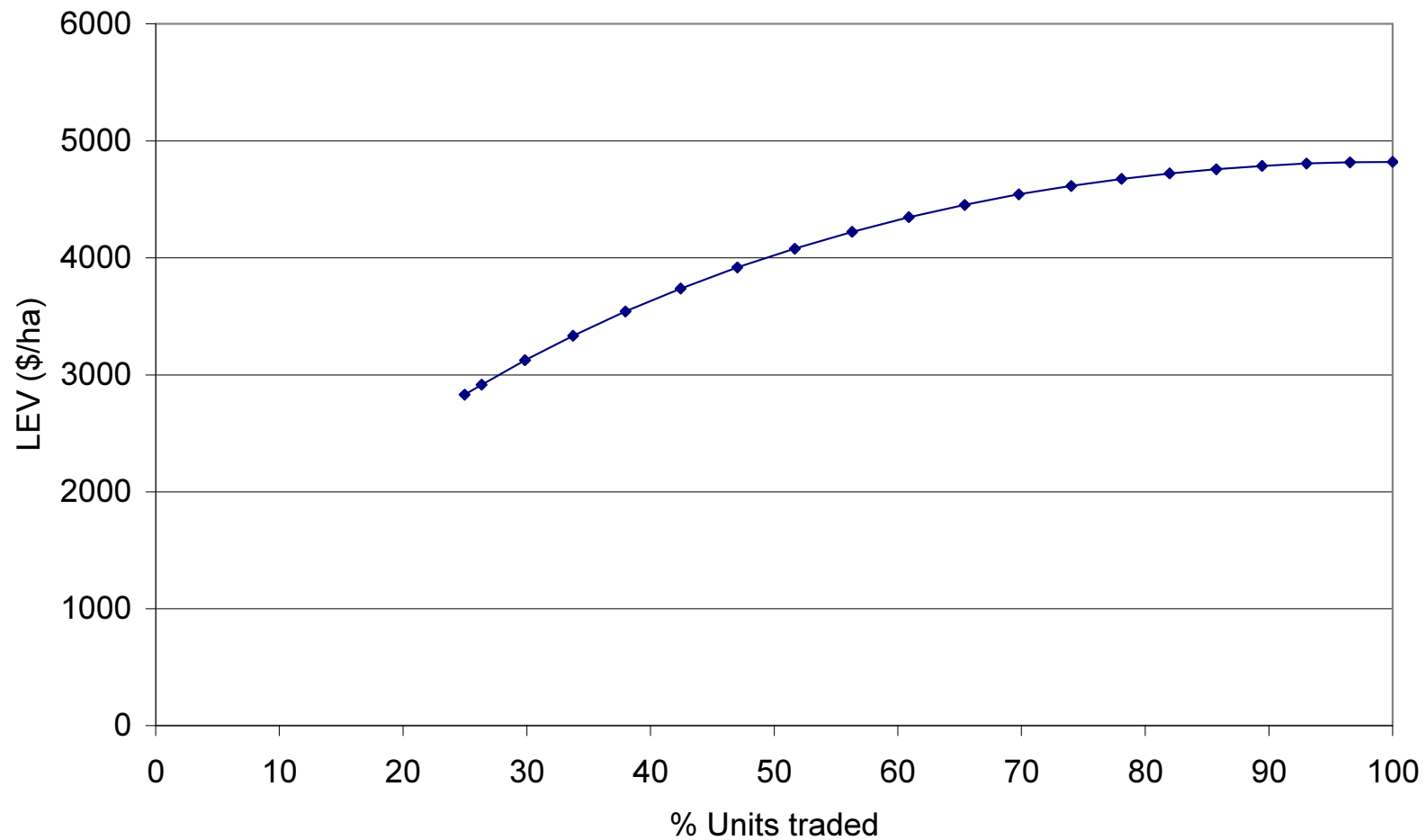
How to manage cashflow risk at time of harvest (stand-level)

- Keep money in the bank
- Option to defer harvest
- Grow a valuable crop – i.e. higher value log products
- Alternative carbon trading strategies

Alternative carbon trading strategies

- Sell all units received
- Sell only “safe” units
- Something in between

Alternative carbon trading strategies



Can also hedge
for carbon price risk
at the estate level

Hedging using forest structure

- Can have many different types or ages of stands in a forest
- Infinite number of combinations of:
 - Species;
 - Regimes;
 - Rotation lengths;
 - Harvest vs no-harvest stands
- This evens out the peaks/troughs (and the profit!)
- Can vary the area harvested and/or harvest date
- Can “normalise” your forest

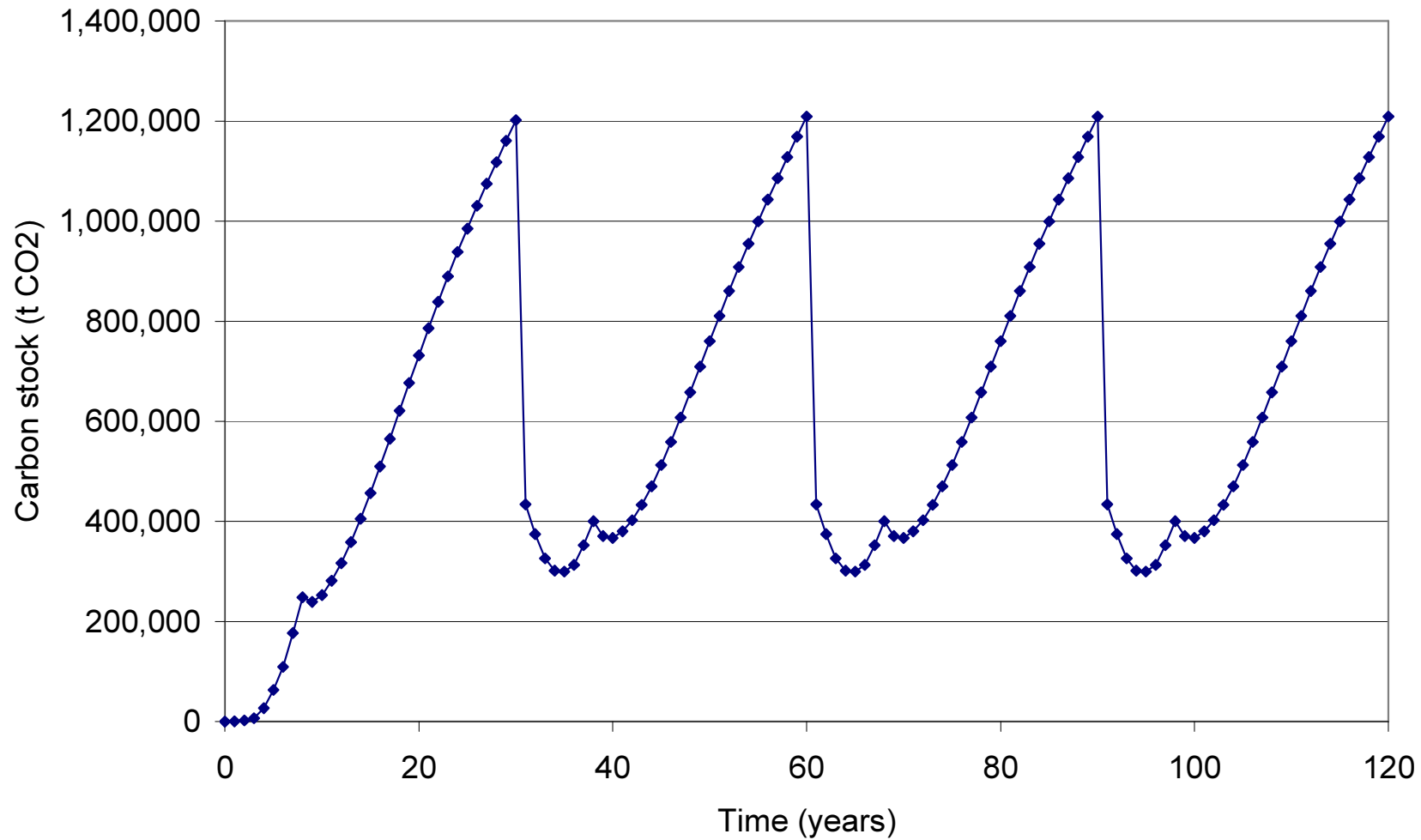
Estate-level example

- Suppose that you are considering a 1200 ha block of land
- Land cost = \$3000/ha

1. Plant & harvest estate as a single unit

- Plant 1200 ha in 2010
- Harvest all 1200 ha at age 30

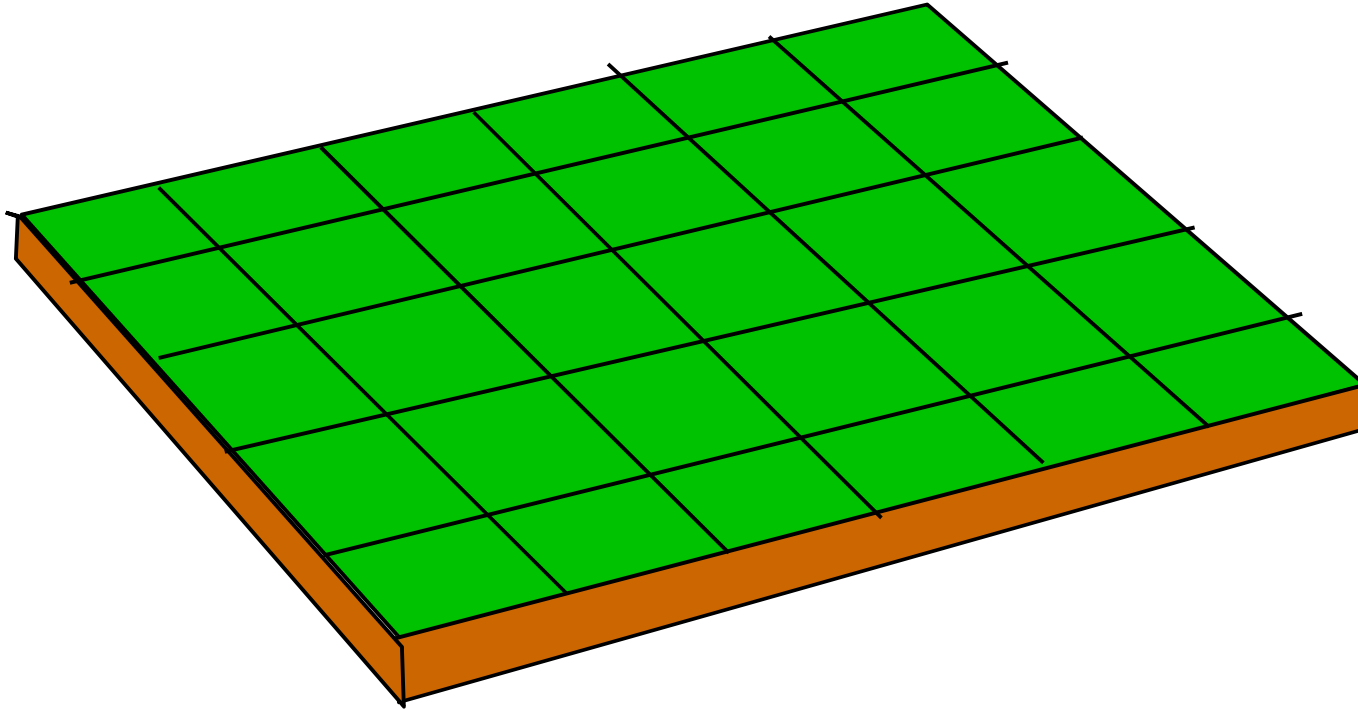
1. Plant 1200 ha now,
harvest 1200 ha after 30 years



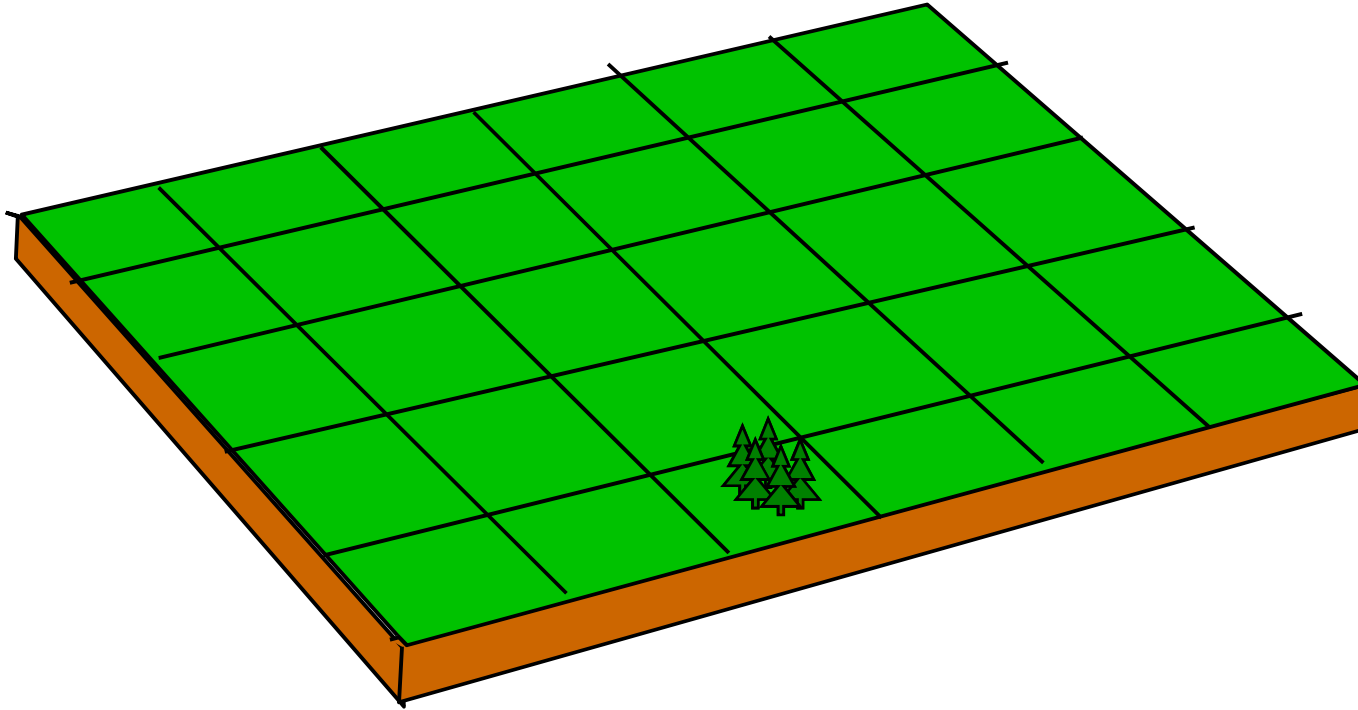
Strategy 2

- Plant 40 ha/year,
- Harvest 40 ha/year after 30 years

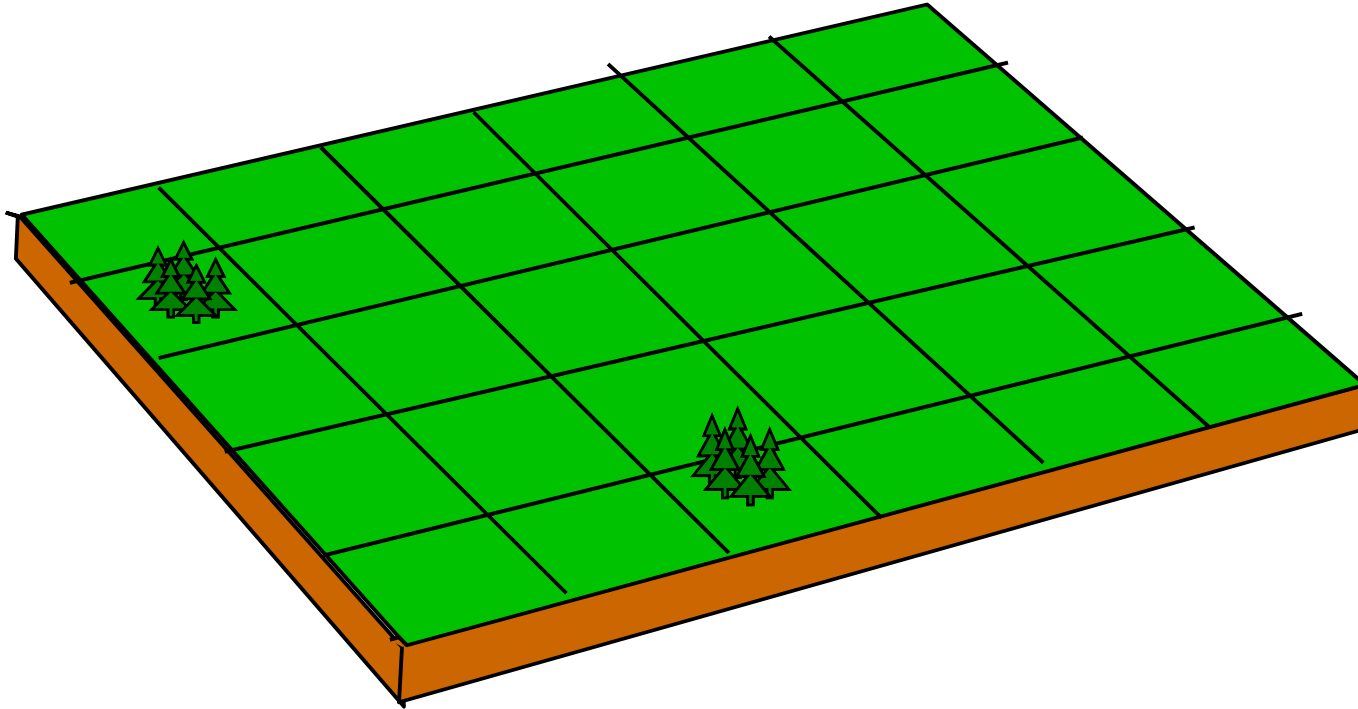
Year 0



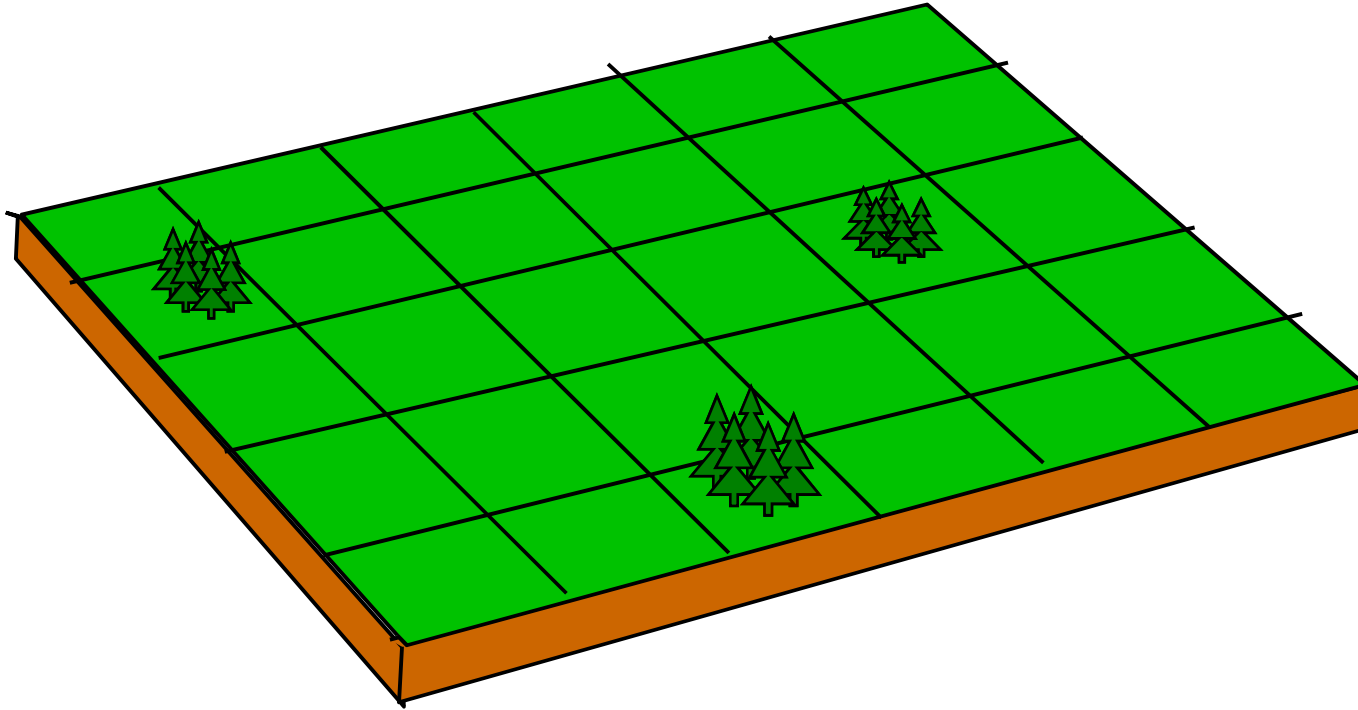
Year 1



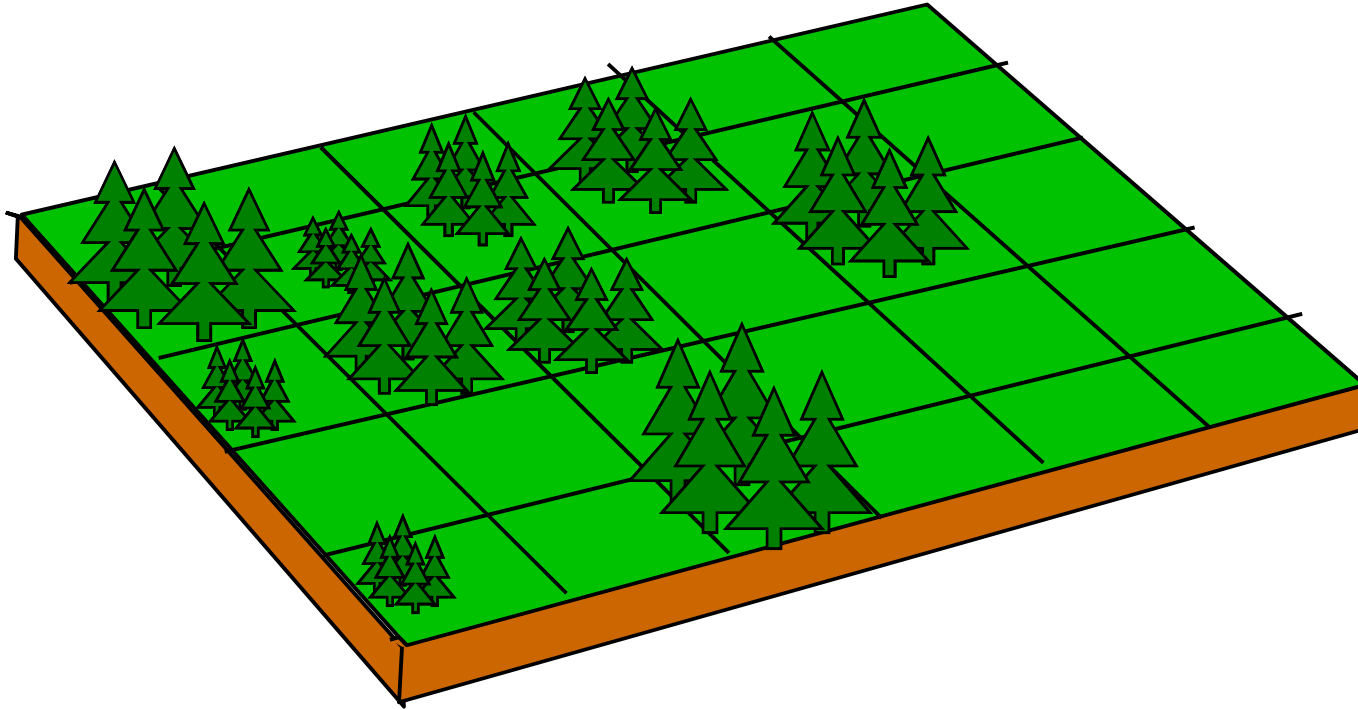
Year 2



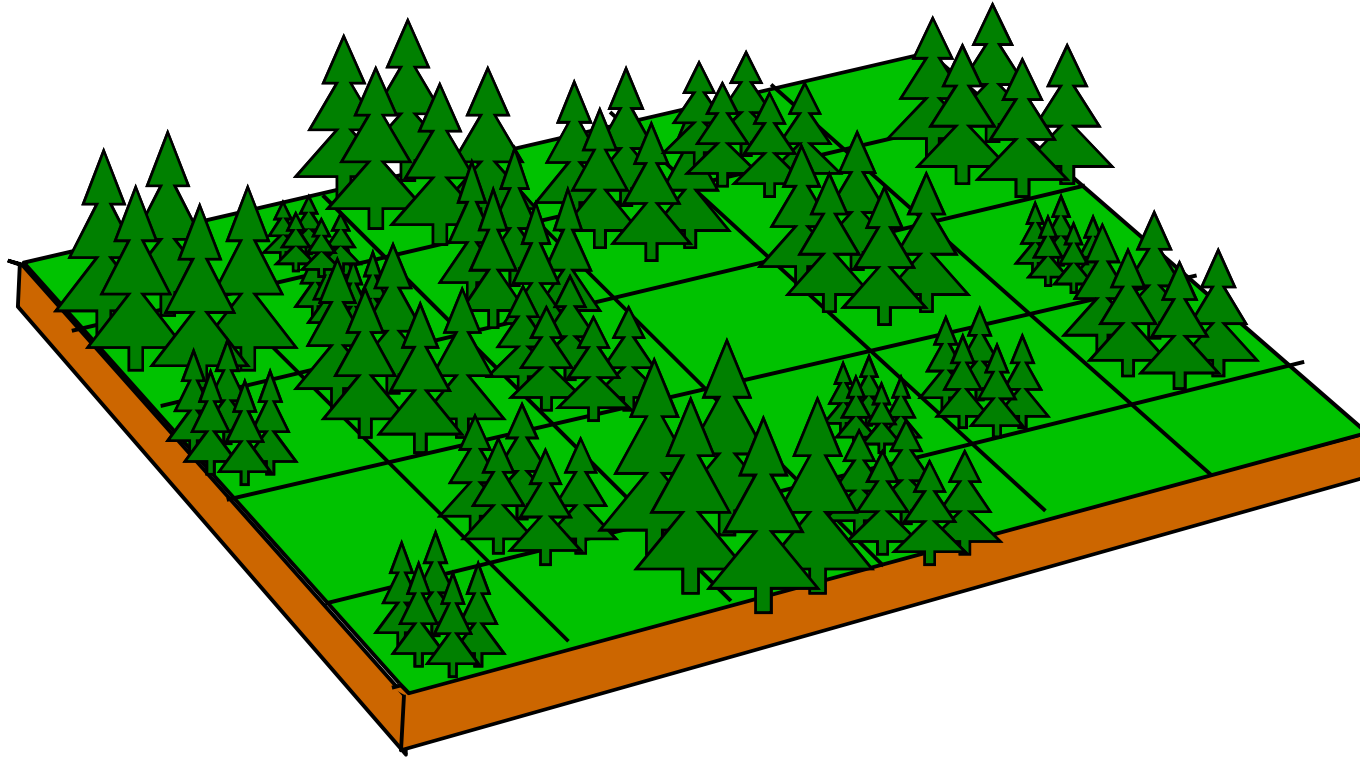
Year 3



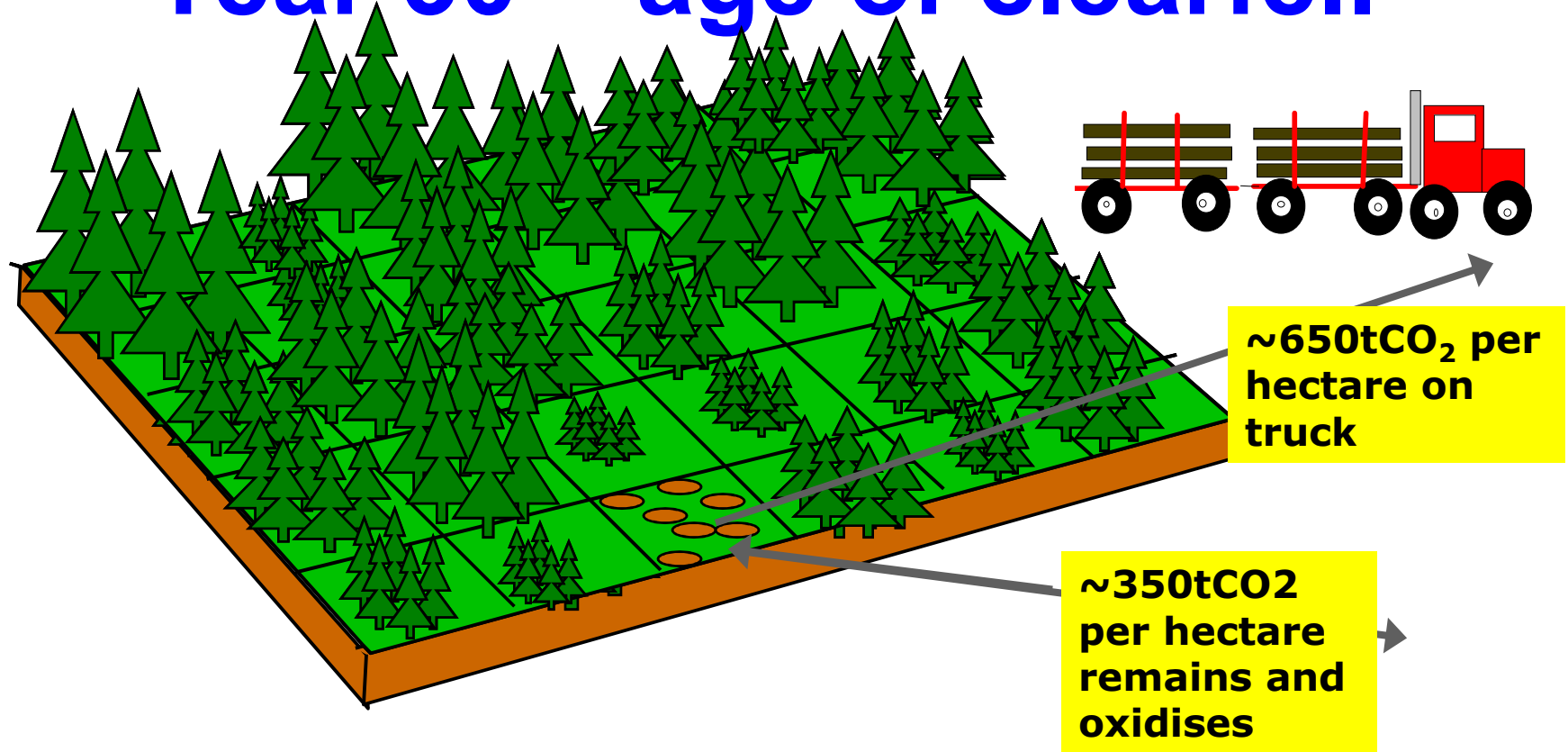
Year 10



Year 20

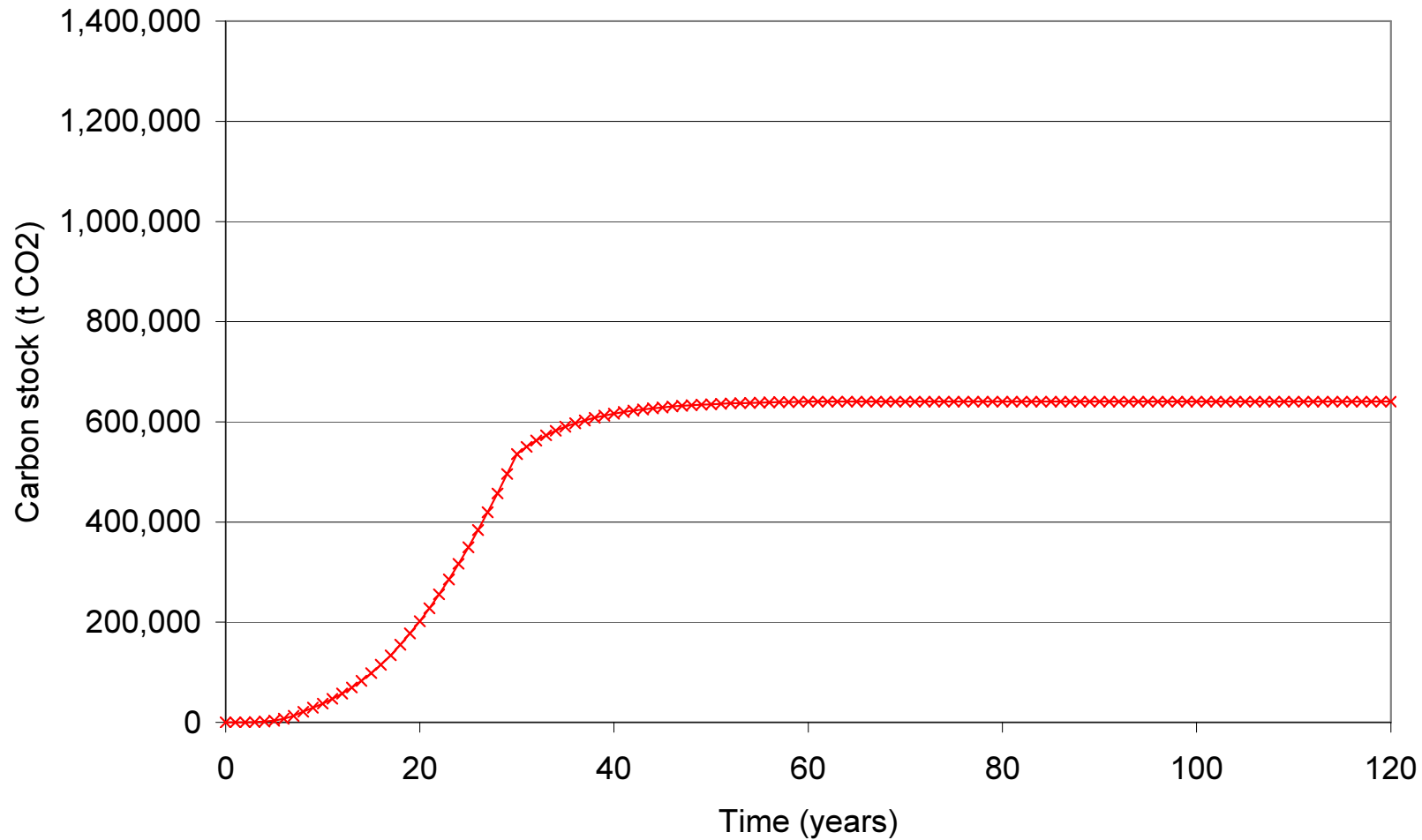


Year 30 – age of clearfell



•A “normal” forest. A STEADY-STATE SITUATION. The growing trees absorb the same amount of carbon per year (about 1000 tCO₂/ha) as that removed by truck + that oxidised in the forest

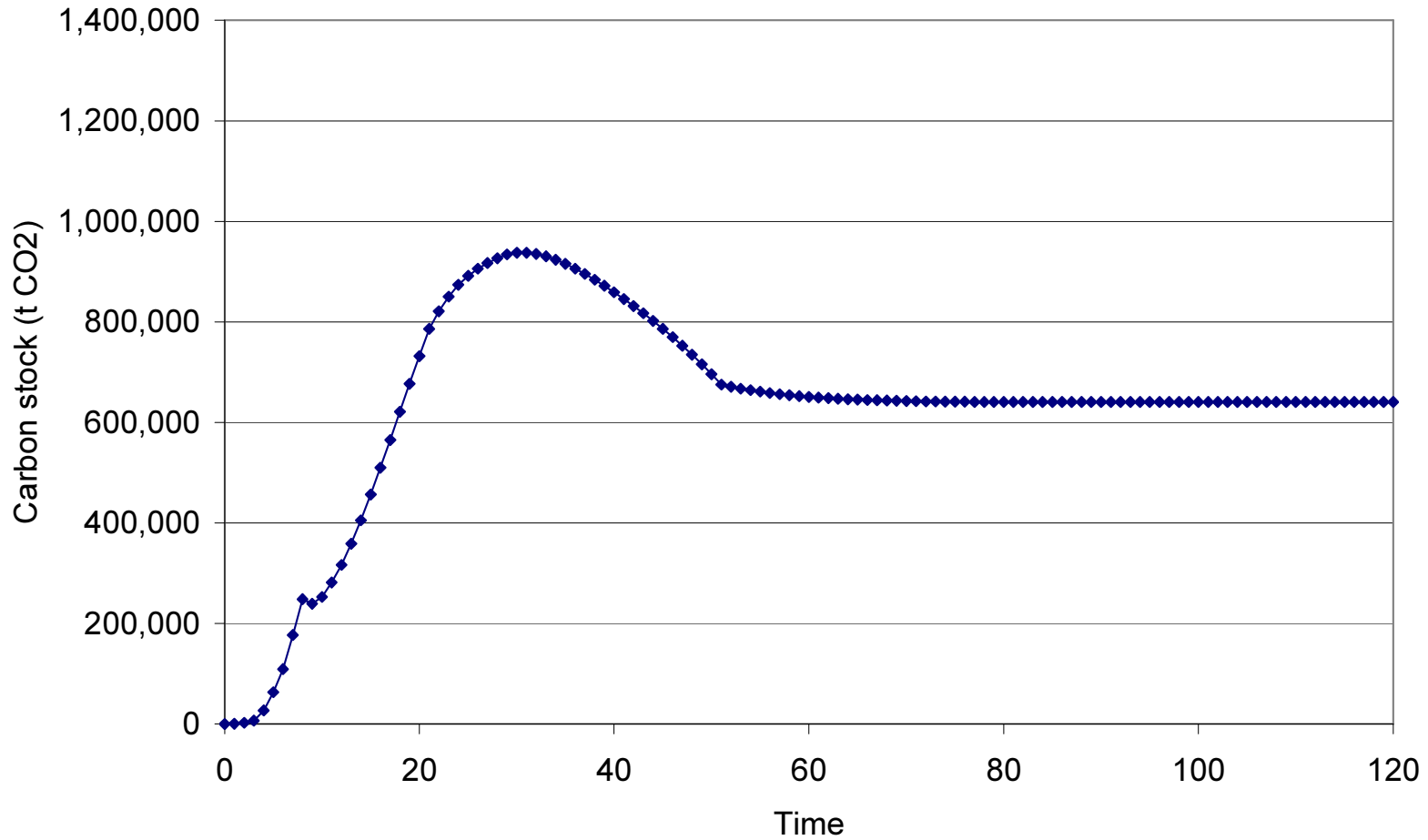
2. Plant 40 ha/year, harvest 40 ha/year after 30 years



3. Plant & achieve a normal forest by harvesting

- Plant 1200 ha now
- Harvest 40 ha/year at ages 21 to 50 years in 1st rotation
- Harvest 40 ha/year at age 30 years in subsequent rotation

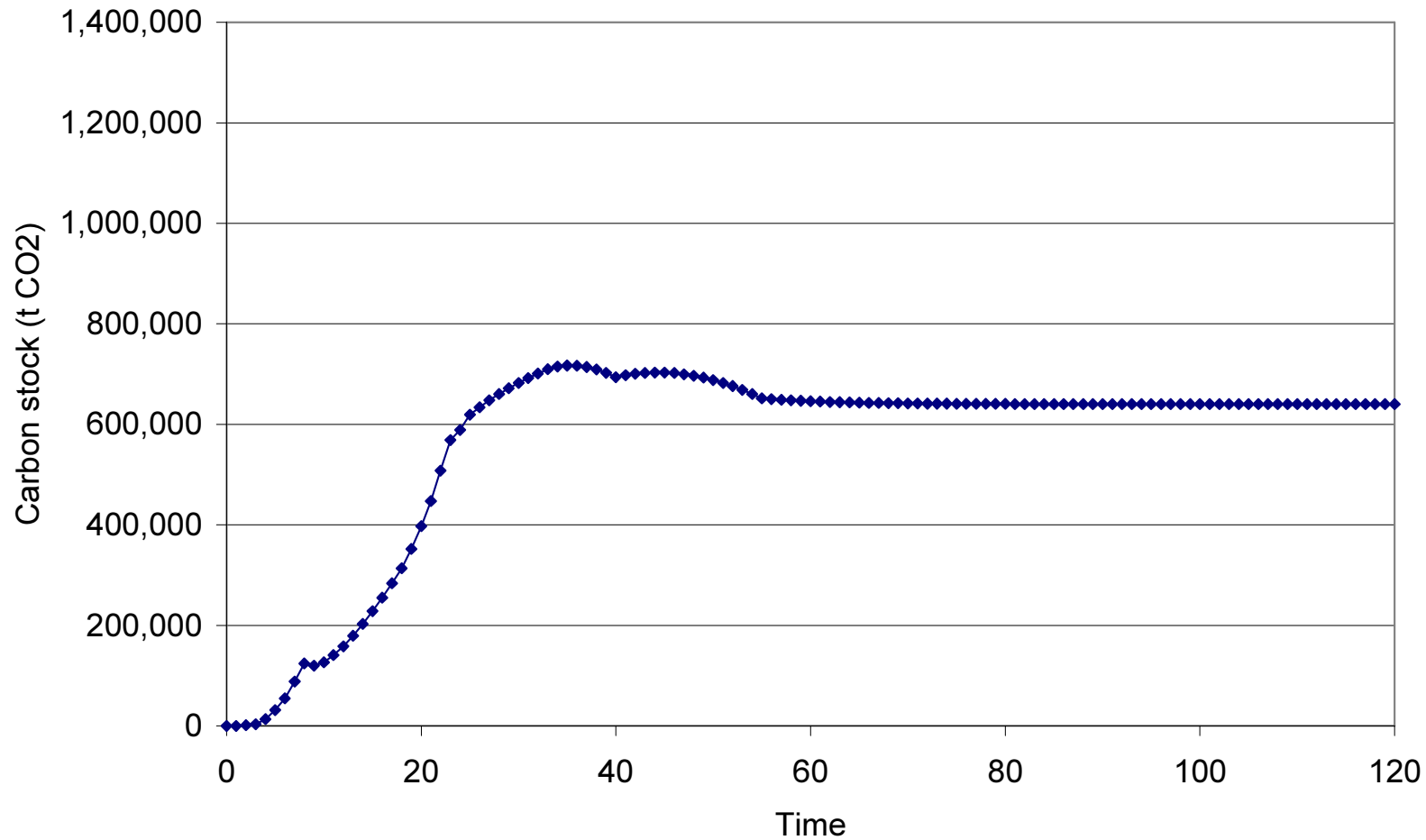
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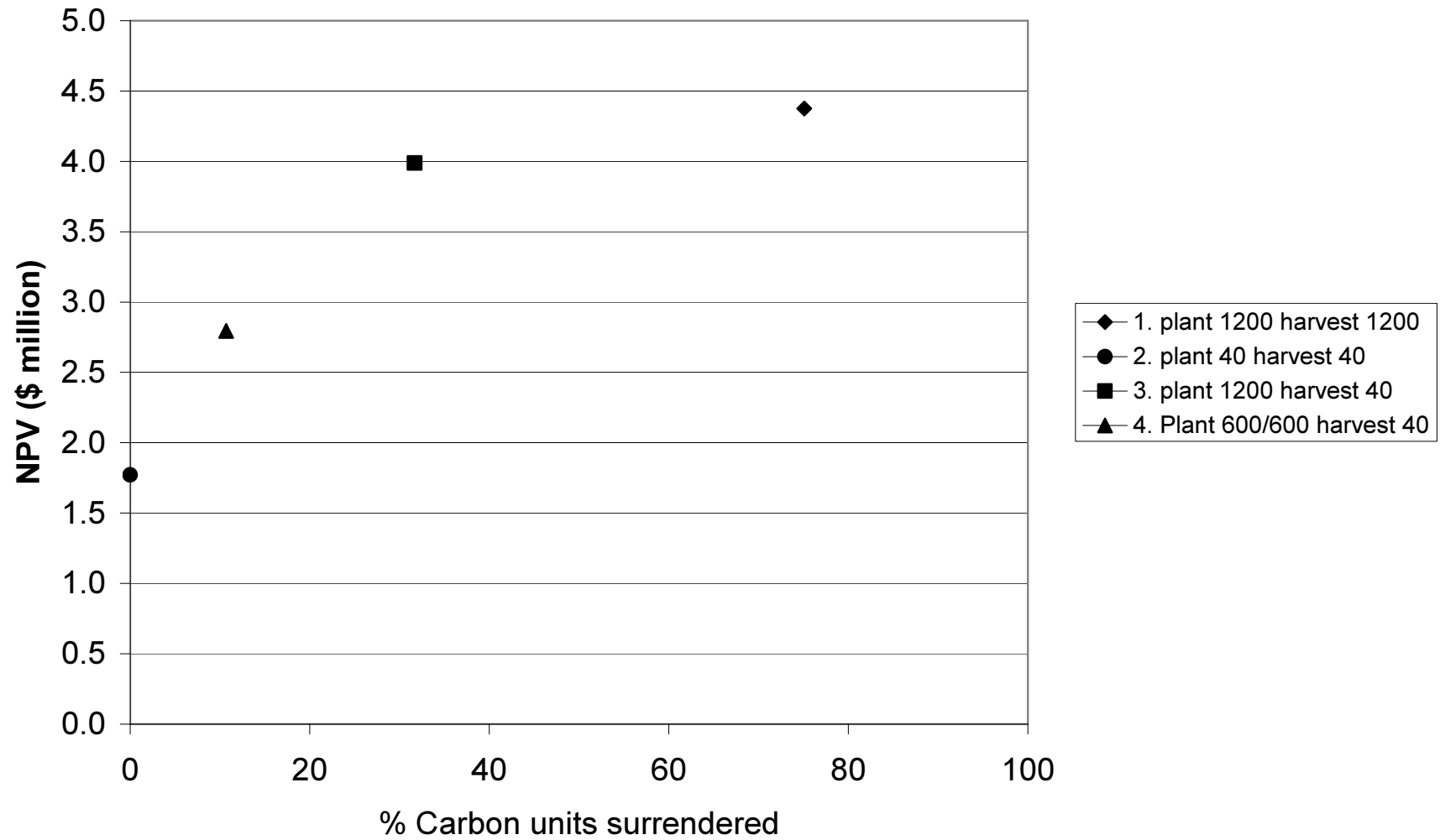
4. Plant in blocks & achieve a normal forest by harvesting

- Plant 600 ha now & 600 ha after 15 years
- Harvest 40 ha/year between ages 25 and 39 years in 1st rotation
- Harvest 40 ha/year at age 30 years in subsequent rotation

4. Plant 600 ha now & 600 ha after 15 years,
harvest 40 ha/year at ages 25 to 39 years



Risk/return trade-off



Am I going to
participate in the ETS?

My own JV block

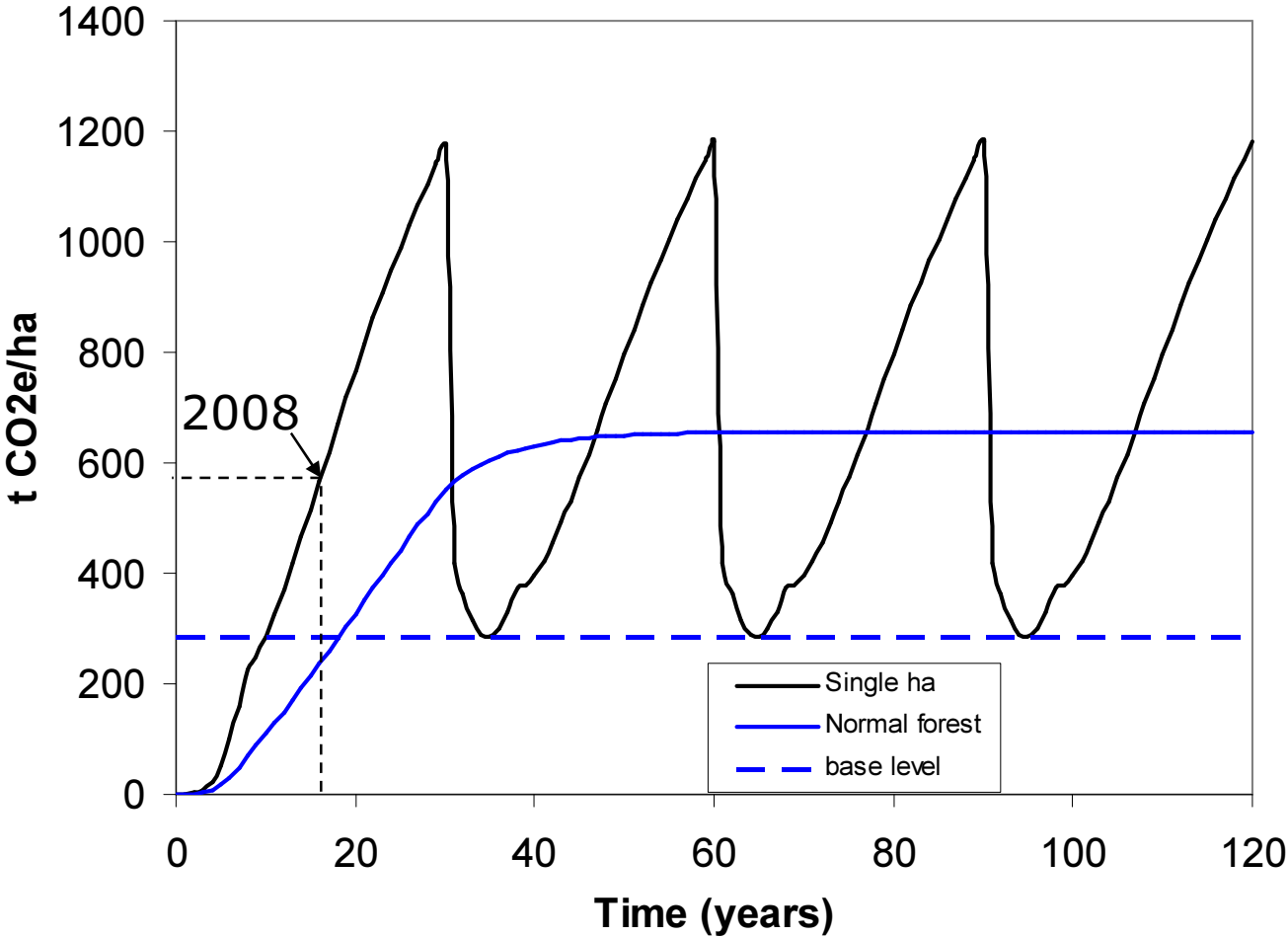
Bay of Plenty



My own JV block Bay of Plenty

- 100 hectares
- Planted 1992
- Already contains more carbon than “minimum” level
- Can only sell credits that must be surrendered at harvest

Carbon Stock for 1992 forest in 2008



My own JV block Bay of Plenty

- 30 partners
- A range of views!



My own JV block

Bay of Plenty

- Some partners
 - Sell credits
 - Earn interest on revenue (or need cash now)
 - Repay credits at harvest
 - Easy if surrender value is less than log revenue
 - Risk that carbon price jumps at time of harvest
 - Claim, sell, repay credits in subsequent rotations

My own JV block

Bay of Plenty

- Some other partners
 - Decline to join the ETS.
 - Return from the carbon money does not outweigh
 - Costs (including hassle!)
 - Risks of repaying credits
 - Might be different if the forest was planted later...

My own JV block

Bay of Plenty

- Other partners
 - Join the ETS
 - Retain all units until market opportunities and risk become clearer
 - Keeps options open – but have measurement costs (If requirement to measure is set at >50ha)

My own JV block Bay of Plenty

- **Final Decision?**
- 30 partners, with both risk averters and risk takers (or those just desperate for cash now)
- But need “all or nothing” collective response (legislative requirements)
- Have postponed decision until situation clearer
- Delay may not cost much – provided made before mid-2012

New land investment opportunity



New Forestry Investment?

- A lot of land like this
- Was once profitable to grow trees on it
- Land price is now too high (~\$4000/ha)
- Even though the profitability of sheep continues to decline
- Not now profitable to plant trees for timber revenue alone
- Potentially profitable if include carbon

New land investment opportunity

- Cost of land is an issue
 - Risky to purchase based on carbon
- Different if already own land
 - Particularly land that has a low opportunity cost
 - Less risk

Conclusions

- Participating in the ETS involves risk
 - If you sell units
- There are ways of managing this risk
 - Invariably if you reduce risk you also reduce the expected return
- Horses for courses – seek professional advice