



The Green Moo-vement Science lesson 5

Learning aim: To describe the consequences of human activity on the Earth's atmosphere and suggest solutions to reduce the impact.



Staying positive step 7 – I look for opportunities in difficult situations.



Teamwork step 7 – I contribute to group decision making, whilst recognising the value of others' ideas.

Scenario

Sam is a dairy farmer with 100 cattle spread out in 20 fields. Each field is 10 acres in size. Sam's farm produces milk for a large supermarket chain. Sam does not grow crops on his land even when the cows are in sheds during the cold winter months. In the last few years, Sam has been losing money as the supermarket have told him that they have started to buy from farms that are promoting themselves as 'sustainable', 'green' and 'environmentally friendly'.



Scenario continued

Sam needs to make changes to his business to survive. He has printed off the data from the milking parlour computer which informs him how many pints per day his cows produce on average during the months of the year. Sam also asked for his costs versus profit information from his accountant and has researched some information on the internet. Sam has also emailed the National Farmers Collective for advice, and they have sent him a reply.

Scenario continued

You are a business consultant working for a large accountancy firm. Sam has approached your company for advice on how to improve his business. You need to produce a 5-step sustainability plan to report to the supermarket. The report will potentially help save his farm from bankruptcy. Use all of the information provided on your worksheet to make notes in each of the sections of Sam's 5-stage plan. You will be feeding back later in the lesson.

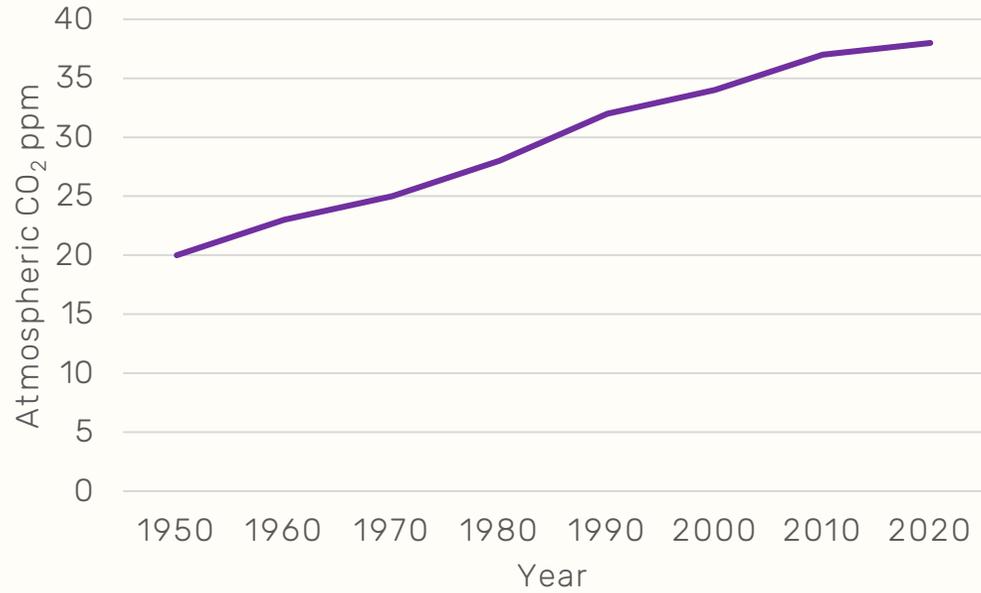
You may want to think about:



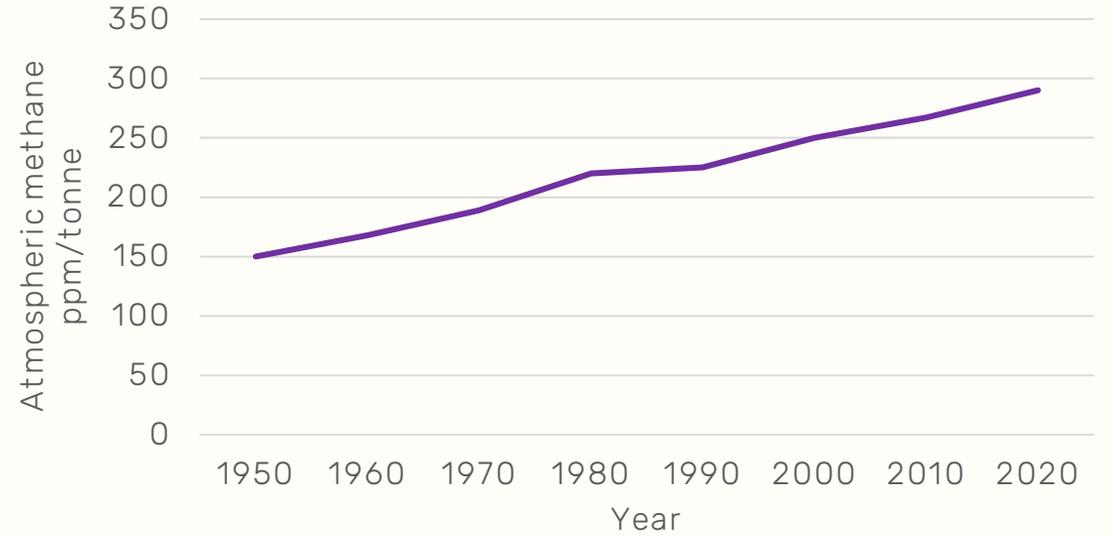
Scenario continued

- 1) What are the problems Sam is facing on his farm?
 - 2) Should he grow crops?
 - 3) Should he keep the cattle?
 - 4) Should he do anything with his land in the winter when the cows are in the shed?
 - 5) What could he say to the supermarket to show he is becoming more sustainable?
 - 6) How carbon dioxide and methane levels are connected to his farm.
 - 7) How he can reduce costs and so increase profit.
 - 8) How do plants affect the concentration of carbon dioxide in the atmosphere?
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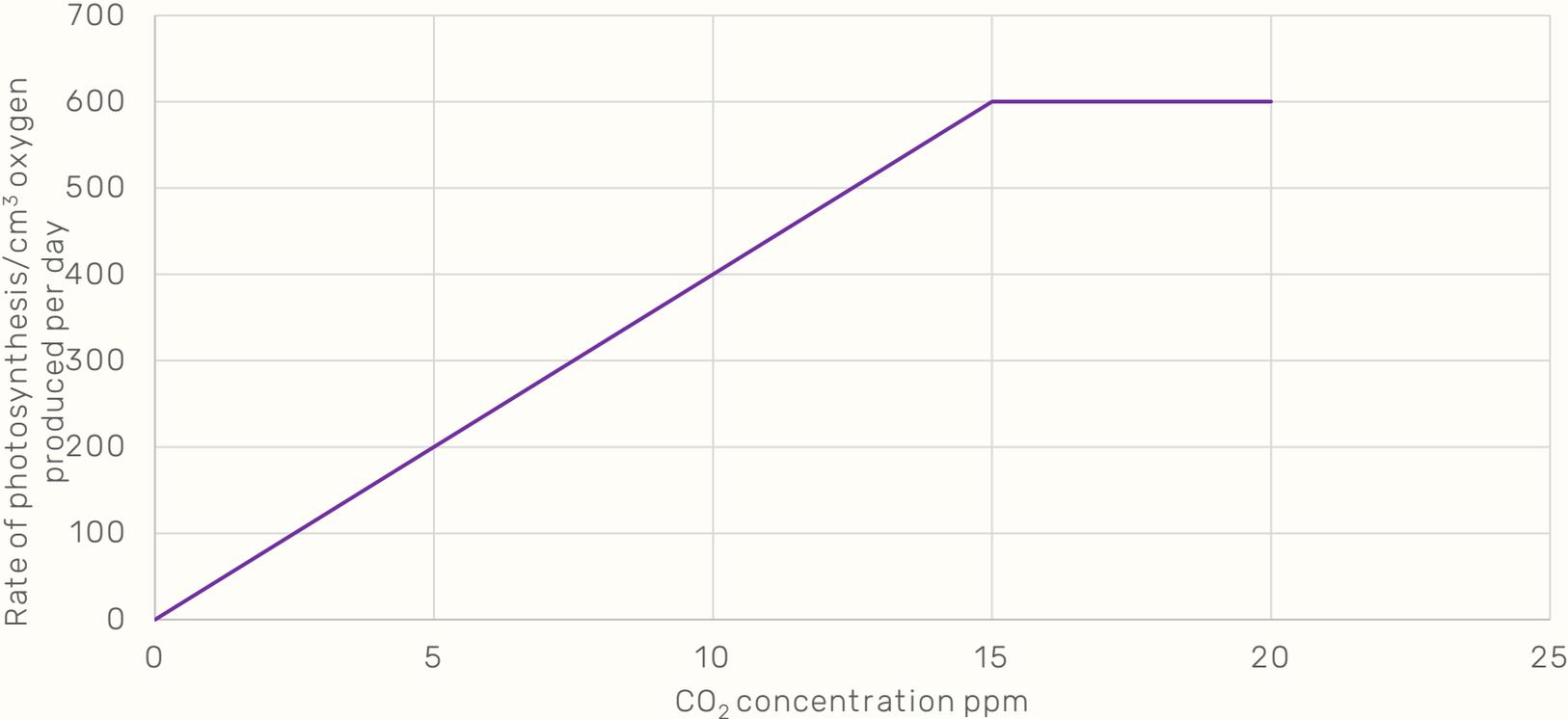
Atmospheric CO₂ levels ppm



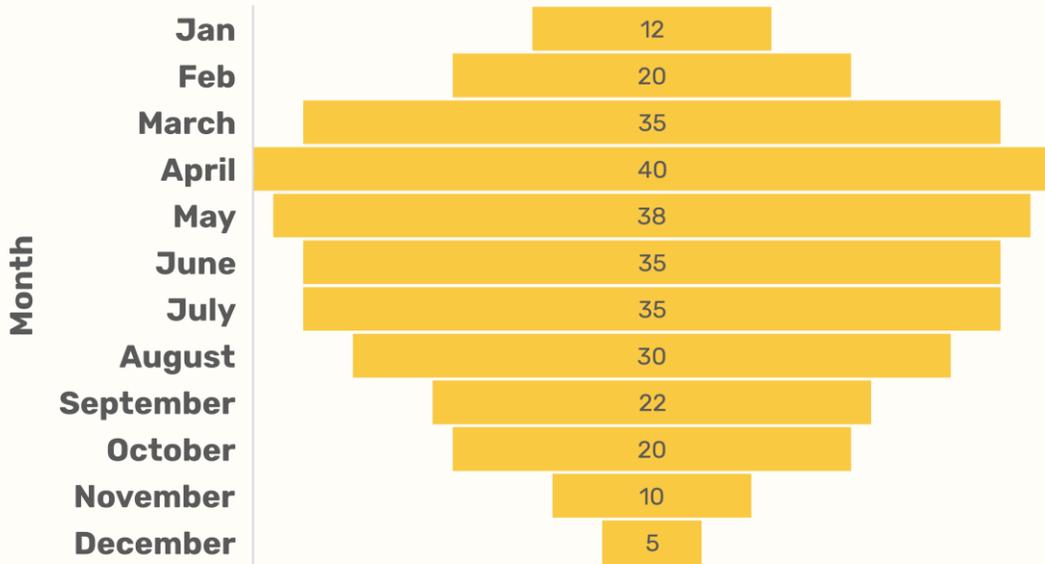
Global atmospheric methane produced by cattle ppm/tonne



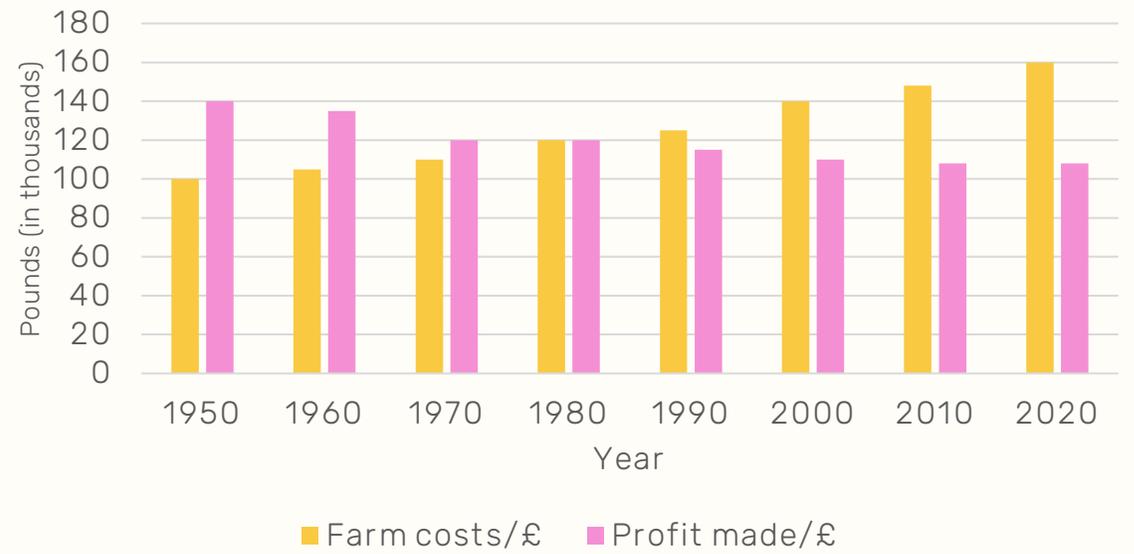
Rate of photosynthesis at different concentrations of carbon dioxide



Amount of milk/pints/per cow/per day



Farm costs vs farm profits



Reflection

- 1 - If Sam had to do just one thing to make his farm more sustainable, what should it be, and why?
- 2 - Rate yourself 1-5 on how well you contributed to your group's decision making today?
1 (I hardly contributed) - 5 (I contributed ideas and was able to recognise / build on others' contributions)
- 3 - What could you do to improve in this area next time?