Where Do Tomatoes Come From?

Teacher's Notes

Summary	Children use cards to compare British and Spanish Tomatoes.
Activities	Children are provided with information about how tomatoes get to their kitchen from UK and Spanish growers. They arrange cards on these sheets (or tick appropriate options) to show the use of energy, production of carbon dioxide, creation of jobs and production of waste during the process.
Teacher info	During discussion with the children, highlight areas where energy is being used, waste is being created and people are kept in employment. Think about: • Production • Processing • Transport • Packaging • Retail shops • Disposal • Wealth creation and who benefits from the tomato production and sale Points to raise: • Tomatoes grown in UK do not travel as far, but… • … tomatoes can only grow outdoors in the UK for a short season • Energy is required to heat greenhouse for a longer UK season – gas is often used and so generates carbon dioxide • It's a lot warmer in Spain, so extra heating is not needed • Energy is needed to transport tomatoes from Spain to the UK • Carbon dioxide produced by heating greenhouses may be more than that produced by transporting tomatoes • UK tomato growers create jobs and wealth in the UK
Timing	45 minutes in class
Resources	Worksheet and cards supplied below. Access to internet if research into tomato growing
Curriculum links	Science – use a range of environmental contexts Geography – study a range of environments and understand how they are interdependent.
Differentiation	Children can be asked to research tomato growing using the internet. Other issues that could be considered include pest control and heat/power use. Useful web site, just for kids, at: http://www.thetomatozone.co.uk For grown-ups, see: http://www.britishtomatoes.co.uk

Further Background Information

There are many aspects to this issue that are too complex to include at this level. However, you may value knowing a bit more about these yourself!

Growing Methods

UK Tomatoes are generally grown in greenhouses from February to November. These greenhouses need heating for some of this time, and most growers use gas heaters.

Spanish production usually takes place under polythene sheeting (large 'poly-tunnels'), and little or no heating is needed because of the warmer climate.

The Simple Answer

Which generates more carbon dioxide: heating greenhouses using natural gas or transporting tomatoes all the way from Spain? Simple answer: heating greenhouses. This would suggest that it may be better, in terms of carbon emissions, to buy Spanish tomatoes when they are 'out of season' in the UK, even though they have travelled further.

There Not-so-Simple Answer

There are several developments in UK growing that alter the overall picture. Some of the differences between Spanish and UK methods also have an impact on carbon emissions if the whole system of growing is considered.

Combined Heat and Power

Several UK growers are now using 'combined heat and power', which means they run their own electrical generator and:

- Use the electricity as required on site
- Sell surplus electricity to the national distribution system
- Use waste heat from the power generators to heat the greenhouses (and offices etc)

Waste heat and CO2

Other growers heat greenhouses using waste heat from nearby industry. In some cases, waste carbon dioxide is also piped into the greenhouses – plants like carbon dioxide for photosynthesis.

Glass v Polythene

Glass greenhouses (usually with aluminium frames) generally last at least 20 years, and some as much as 50 years. Both glass and aluminium are commonly recycled. In contrast, polythene (used by Spanish growers) is replaced about every 3 years, and is itself made from oil.

Pest Control

UK growers commonly use natural predators to control pests that affect tomatoes, whereas Spanish growers tend to use chemical pesticides (manufacturing these requires energy, and so generates carbon dioxide)