

Back to the future for sintering

Charcoal from trees planted to combat salinity could lead to more efficient and cleaner steel making.

Sintering, which agglomerates fine iron ore into useable lumps, is usually fuelled by coke 'breeze' – the fine particles left over from the production of coke for the blast

furnace. However, environmental pressures and improved coke production practices have reduced supply and significantly increased coke breeze prices.

CSIRO Minerals Project Scientist, Roy Lovel, who is part of a multidisciplinary team investigating uses of biomass in the steel industry, says 'We've found that using charcoal produced from trees instead of coke (a coal derivative) to fuel iron ore sintering significantly improves productivity and environmental performance.'

CSIRO's sintered product has similar physical properties to the coke-fuelled version, is produced more quickly, has balanced greenhouse gas emissions and radically reduces noxious gas emissions.

'Rotational harvesting of managed plantations can integrate energy production, while protecting native plants and animals.'

'We relied on wood char as blast furnace fuel until the 1700s, resulting in widespread deforestation; so it's interesting that three centuries later we are looking at biomass for environmental reasons,' muses Mr Lovel.

'Rotational harvesting of managed plantations can integrate energy production, salinity amelioration and erosion control, while protecting native plants and animals.'

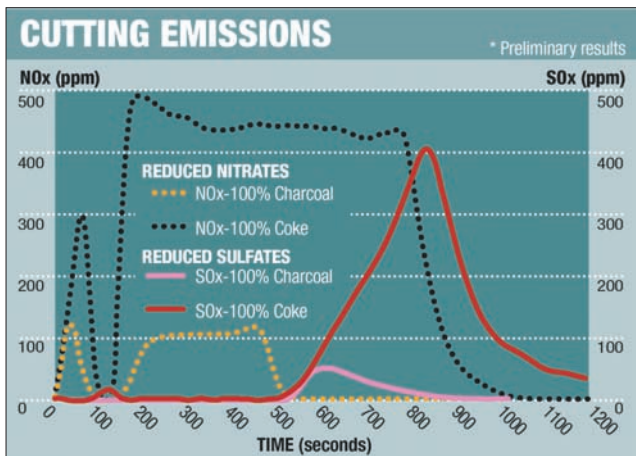
Calculations suggest the yearly plantation of mallee gums currently underway in Western Australia for salinity control could provide enough fuel for the entire Australian steel industry.

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Charcoal yields significantly less nitrates and sulfates.

Meat diets drive water consumption

According to international water expert Professor Frank Rijsberman, a person's diet, not how long they spend in the shower, is the main determining factor in per capita water consumption, with meat requiring vastly more water to produce than most other food.

'On average it takes roughly 70 times more water to grow food for people than the amount people use for domestic purposes,' said Professor Rijsberman, Director-General of the International Water Management Institute, based in Sri Lanka.

A kilogram of beef may use more than 13 times the amount of water needed to produce the same weight of cereal. So the diet of a typical meat-eater comes courtesy of about 5400

litres of water a day, double that of a vegetarian getting the same nutritional value.

Professor Rijsberman made that point at the recent 4th International Crop Science Congress in Brisbane, which brought together over 1000 delegates from 65 countries to focus on the key issues for the future of cropping systems that provide the food, feed and fibre for the world.

The obvious solution, he says, is 'producing more food while using less water', and for that there is a priority for water-use efficiency research and technology application.

Professor Rijsberman says up to two-thirds of the world will face water scarcity in the coming decades, particularly in low-rainfall, high-population



Livestock production is heavy on water. Robert Kerton

areas such as Africa and the Middle East.

He further points out that it does not automatically follow that water is scarce because 1.2 billion people do not have access to safe and affordable supplies. In many parts of the world, water is scarce because of poor delivery, often due to

a lack of money.

The Institute estimates the world will need 29 per cent more irrigated land by 2025 to feed a rapidly increasing population. Improved water productivity could limit the required increase in agriculture to 17 per cent.