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Ancient skills 'could reverse global warming'

Trials begin of a technique used by Amazon Indians that takes CO2 and locks it safely into soil

Ancient techniques pioneered by pre-Columbian Amazonian Indians are about to be pressed into service in Britain and Central America in the most serious commercial attempt yet to reverse global warming.

Trials are to be started in Sussex and Belize early in the new year, backed with venture capital from Silicon Valley, on techniques to take carbon from the atmosphere and bury it in the soil, where it should act as a powerful fertiliser.

The plan is to scale up rapidly into a worldwide enterprise to reverse the build-up of carbon dioxide, the main cause of global warming, in the atmosphere and eventually bring it back to pre-Industrial Revolution levels.

The ambitious enterprise – which on Friday received its first multimillion-pound investment from California – is the brainchild of two of Britain's most successful environmental entrepreneurs: Craig Sams, one of the founders of the best-selling Green & Black's organic chocolate, and Dan Morrell, who co-founded Future Forests, the first carbon offsetting company.

They aim to grow trees and plants to absorb CO2 and then trap the carbon by turning the resulting biomass into "biochar", a fine-grained form of charcoal that can be buried in the soil, keeping it safely locked up for thousands of years.

The pre-Columbian Indians used biochar to make the poor soils of the rainforest – which otherwise quickly become exhausted – productive for harvest after harvest. It is still there today, many hundreds of years later, forming islands of black fertile earth in the otherwise unpromising ground.

But it is now being widely cited as a possible solution to global warming by scientists shocked at how climate change is taking place much faster than predicted and convinced that the world must now start not just rapidly to reduce CO2 emissions, but to get the greenhouse gas out of the air.

Among them is Professor James Hansen, director of Nasa's Goddard Institute of Space Studies and probably the world's most respected climate scientist, who believes CO2 concentrations must urgently be reduced from its present 385 parts per million to 350 if global warming is not to run out of control. International negotiations – continuing this weekend in Poznan, Poland – are aimed at stabilising them at the higher level of 450ppm.

Trees and plants soak up carbon dioxide as they grow, but release it again as they are burned or left to rot. But burning them largely in the absence of oxygen, through pyrolysis, reduces the amount of the gas emitted by 90 per cent, and stores the carbon in the charcoal instead. It also gives off energy that can be used as an efficient biofuel.

If the resulting biochar is then buried in the ground it will stay there for some 5,000 years, keeping the carbon out of the atmosphere, and nourishing the soil while it is there. It also cuts down on the use of fertilisers; reduces the emission of methane and nitrous oxides, which are also greenhouse gases, from the ground; filters out pollutants; and retains water, thus combating flooding.

The new enterprise will start with wood grown in Suffolk and with prunings from the Belize cacao trees that supply Green & Black's chocolate. But its founders hope that it will rapidly become a worldwide industry.

Mr Sams calculates that if just two and a half per cent of the world's productive land were used to produce biochar, carbon

dioxide could be returned to pre-Industrial Revolution levels by 2050.

He said: "Biomass from trees and plants, which captures carbon dioxide from the atmosphere, is a treasure to be buried in the earth."

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