

Scientists say photosynthesis has a key role in future energy supply

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Leading experts in photosynthesis research will discuss tomorrow how understanding the fundamental processes that plants use to turn light into energy is a key way of securing cheap, emission-free energy in the future.

Speaking at a public discussion in Glasgow, organised by the Biotechnology and Biological Sciences Research Council (BBSRC), the scientists will say that furthering our understanding of photosynthesis offers an innovative way of producing environmentally friendly energy.

A renewable energy expert from the University of Aberdeen, Professor Paul Mitchell, will also be on a discussion panel to cover the social and environmental issues raised by this potential new technology. Speaking ahead of the event Professor Mitchell said that once photosynthesis was understood at a more detailed level, then the crops needed for fuel should not take up vast areas of land.

"Biofuels have had a very bad press because it is suggested they will take up vast areas of land and put pressure on food crops. We are now getting to the second stage of biofuel, which are not using food crops but using the residue - straw and forest waste.

"This takes it outside the food arena onto a stream of material which is not being utilised. If you can then increase the level of productivity of the plant, then you do not need so much land."

Professor Mitchell said he foresaw that in about five years the UK would have bio-refineries, using photosynthesis technologies as they come on stream, which would break down woody cellular material into food additives, fibre, fuel, and chemicals.

"The creation of liquid transport fuels - that's the prize for the future," he said.

At the public event tomorrow evening, Professor Jim Barber of Imperial College London will say that if we can understand exactly how plants capture and store solar energy, we could mimic the natural process to design solar panels with better energy conversion rates and also develop a clean, efficient means of producing hydrogen fuel.

Professor Christine Raines of the University of Essex will also discuss how a better understanding of photosynthesis could lead to improvements in plant biology and consequently better crops for biofuels.

"More solar energy strikes the earth in one hour than all the global fossil fuels provide in a whole year," explains Professor Barber. "Early on in the history of life on earth, plants developed mechanisms that took advantage of this immense energy resource and captured it in the process that we now call photosynthesis.

"Plants use solar energy to split water into oxygen, released as 'waste', and hydrogen which they use to help build sugars that feed the plant. We do not fully understand how photosynthesis works, but recent key advances in plant research mean that the time is right to consider this science as a basis for future sustainable energy sourcing."

Sociologist Professor Steve Yearley from the University of Edinburgh and Professor Mitchell from Aberdeen will also be on the discussion

panel to speak about the social and environmental issues raised by this potential new technology. They will invite the audience to compare the potential benefits and risks of photosynthesis derived energy with biofuels.

"If carefully managed, biofuels could provide a partial solution to dwindling fossil-fuel supplies. However, the biofuels industry currently faces criticism for pushing up food prices and damaging sensitive ecosystems," explains Professor Steve Yearley.

"Photosynthesis on the other hand, does not carry these risks. However, the development of any new technology can have far-reaching effects on society and it is important that we and the wider public assess what those might be at this early stage.

"This discussion provides an excellent opportunity for the public to have a say about this new technology, and even help shape its development."

Source: University of Aberdeen

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