

Plant **power** for the planes of tomorrow

The search is on for a sustainable alternative to fossil fuels for the aviation industry

MICHAEL LUND

RESearchers in Queensland have welcomed news that Qantas next year is looking to power its first commercial flight using sustainable fuel.

"We want the flight to be an inspiration, a preview of a sustainable future for Australian aviation," the airline's boss Alan Joyce said at an Australian Airports Association meeting in Brisbane this week.

The University of Queensland is involved in research to create sustainable biofuel for the aviation industry from a number of organic sources. Sugar cane, algae and oilseed from pongamia plants are all being studied as potential sources for mass production of aviation fuel.

Researcher Dr Robert Speight is part of a team that is also looking at the economic viability of using such fuels over traditional fossil fuels.

While land and ocean-based transportation can look to renewable electrical and hydrogen sources of energy, he says the aviation industry is still reliant on liquid fuel to power aircraft engines.

"They need a fuel to burn, essentially, and so the airlines are watching what's coming through and at the end of the day they're interested in getting a reliable and cheap source of fuel for their business," Speight says.



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"I think the sustainability and green aspect are important to them because of public perception, the fact that the airline industry contributes quite a lot to greenhouse gas emissions."

About a third of the world's \$16 trillion global trade is transported by air and in Australia and New Zealand the industry directly employs about 52,000 people and supports a further 580,000 in tourism, a report by the CSIRO said earlier this year.

But aviation is also responsible for 5 per cent of global fuel use and 2 per cent of greenhouse gas emissions, so there is pressure to reduce that impact. Hence the need to look for cleaner fuels.

Speight says biofuels do burn cleaner than fossil fuels, although they both still produce potentially damaging carbon dioxide.

That forms part of the economic modelling he is working on to examine how "green" biofuel can be.

Biofuel is also controversial because of its reliance on agricultural production for the source material and that can compete with production of vital food supplies. That's another part of the modelling the UQ team is studying.

It's all part of the Queensland Sustainable Jet Fuel Initiative, also involving the UQ-based Australian Institute for Bioengineering and Nanotechnology and James Cook University, the US and Queensland governments and industry partners Boeing, Virgin Australia, Mackay Sugar Limited, Amyris, IOR Energy and GE.

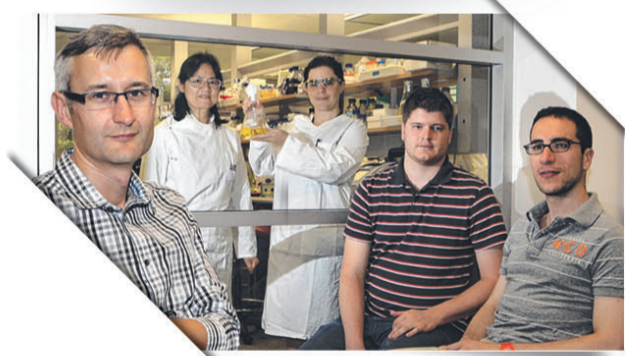
Once any results are known, the aim is to publish all the details online so they are available for anyone to look at, from the aviation industry to any concerned groups.

The oil industry is involved in the research because it is seeking a viable alternative fuel source as fossil fuel supplies become scarce.

"They want to be a business around for hundreds of years to come, not until the oil runs out, so they see biofuel as a way of extending their product," Speight says.

"There is a lot of debate about biofuels. There are a lot of arguments about which biofuels are good, are they sustainable, are they taking food away and things like that."

"Part of the idea is to bring some clarity to the debate where we can say we have these models, this is the data they are drawn on so you can make your own conclusion from what we're doing."



OILS AIN'T OILS: The UQ team looking at economic modelling of biofuel in the aviation industry is led by Dr Robert Speight (left).

Picture: Bruce Long

PLAIN SCIENCE

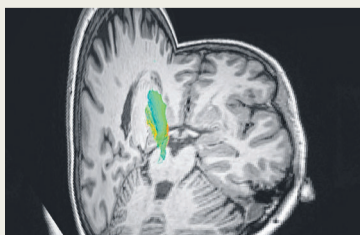
A ROUND-UP OF THE EXTRAORDINARY

RESTLESS RIDDLE UNRAVELS

SCIENTISTS think they've worked out why some people can't stop moving their legs in bed at night.

Early studies at Neuroscience Research Australia show people who suffer from the condition have up to 80 per cent less function in the part of the brain that controls movement compared to other people.

Known as restless legs syndrome, it's a condition that can get worse at



night and disrupt sleep, leading to fatigue. If it isn't treated, it can get worse, and it tends to run in families.

"This is a disorder that is thought to affect 1 in 20 people, and can severely affect quality of life, but we still don't know very much about it," says neuroscientist Associate Professor Kay Double. "This is the first time that anyone has looked for these type of changes in people with restless legs syndrome."

RURAL SUICIDES STUDIED

RESEARCHERS are looking at why the

suicide rate among Queensland's farmers and agricultural workers is almost double the wider population's.

The Australian Institute for Suicide Research and Prevention, at Griffith University, will team up with the University of Newcastle's Centre for Rural and Remote Mental Health for the three-year study. Recent studies identified a higher suicide rate among the state's farmers, farm managers, farm hands and shearers.

"What past investigations have

not done is establish why," AISRP researcher Dr Allison Milner says.

The collaborating researchers will look at environmental factors affecting where farmers live and work, financial stress, global environmental changes and how mining-related activities - such as coal-seam gas exploration - affect life in the agricultural sector.

"We will seek to establish evidence that explains the high suicide rate in this area," says Milner.