First solely-biofuel jet flight raises clean travel hopes

November 8 2012, by Sophie Fougeres

Dassault's Falcon business jets are displayed at an aviation convention in Geneva in 2008. A Dassault Falcon 20 twin engine jet took off from the Canadian capital Ottawa last month to test the new jet fuel, made from 100 percent oilseed, for engine performance and emissions, aiming to make sky journeys less polluting.

The world's first flight powered entirely by bio jet fuel has raised hopes for cleaner air travel and upped the prospects of a boon for farmers whose oilseed crops could supplant kerosene.

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Several engineers were on board, monitoring the engines' performance and fuel burn, making a round trip to Montreal and back in 90 minutes.

Two companies—Applied Research Associates and Agrisoma Biosciences—have partnered with the National Research Council of Canada (NRC) to develop a "sustainable source of renewable energy" for the commercial airline industry.

A second aircraft, a Canadair CT-133 jet tailed the Falcon's October 29 flight, collecting emissions data from the lead plane's engines for analysis.

Until now bio-fuel flights have been restricted to a 50-percent blend with petroleum as the technology was largely unproven.

Several commercial aircraft during the Rio climate summit in June used much-touted bio jet fuels mixed with traditional petroleum jet fuel.

But the October 29 flight was the first time a jet aircraft was powered by 100 percent, un-blended, renewable jet fuel that meets petroleum jet fuel specifications, the NRC said in a statement.

The rapeseed plants in full bloom and ready for harvest in the farms in Luoping, southwest China's Yunnan province in March 2012. More than 40 farmers in Canada's mid-western prairies were contracted to grow over 6,000 acres of the oilseed crop that was turned into bio jet fuel by Agrisoma and Applied Research.

"To date, all powered flight has relied on fossil fuel. This flight changes everything: we have witnessed petroleum free aviation," said Agrisoma president Steven Fabijanski.

Engine tests at NRC's Ottawa laboratories prior to last month's flight proved that regular jet fuel could be swapped with the experimental oilseed variety without modifying an aircraft's engines or fuel tanks.

And after landing back in Ottawa, Canadian test pilot Paul Kissman told AFP he couldn't detect any difference in the engine performance using the oilseed fuel compared to petroleum-based jet fuel.

"For us it was the same," he said, adding that further analysis of the test data would show whether the new bio-fuel had any adverse effects on the engines themselves or whether reduced aviation emissions expectations were met.

The fuel was made from brassica carinata, commonly known as Ethiopian mustard, a crop that is well suited for growing in semi-arid regions.

The Canadian government hopes this initiative will launch a new bio jet fuel industry that becomes a boon to growers.

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To the untrained eye the transparent liquid bio fuel appears identical to petroleum-based jet fuel.

"It turns into essentially drop-in fuel that looks and acts identical to conventional jet fuel," explained Fabijanski, adding that increased oilseed production to make the fuel would not adversely impact food farming.

"The farmers that we use to grow this seed are farmers that have land that is not particularly good for food production. By growing this seed you actually enhance or improve the land for eventual food production," he said.

The cost of production for commercial use has yet to be calculated. But Chuck Red of Applied Research Associates insisted it would be "cost competitive" with petroleum-based fuel, when in full production.

"Through this initiative, we provide a sustainable option for reducing aviation emissions," he said, adding that the fuel could be commercially available within a few years.

The only question remaining is whether the fuel actually lowers emissions, including those linked to global warming; NRC scientists are now poring over the data and hope to deliver an answer within weeks.

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