US military to make jet fuel from algae

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(PhysOrg.com) -- If military researchers in the US are right, jet fuel produced from algae may soon be available for about the same price as ordinary jet fuels.

The military is the largest single consumer of energy in the US, and a cheap alternative to oil would reduce the 60-75 million barrels of oil currently consumed by military operations.

Scientists at the Defense Advanced Research Projects Agency (DARPA) have already successfully extracted oil from algal ponds, and is now about to begin large-scale refining of the oil. Special assistant for energy with DARPA, Barbara McQuiston, said unrefined oil produced from algae currently costs $2 per gallon, but the cost is projected to reduce to

around $1. The refined and processed jet fuel is expected to cost under $3 per gallon.

The refining operation would produce 50 million gallons of oil derived from algae each year and is expected to begin full-scale operations in 2011. Each acre of algal farm pond can produce 1,000 gallons of oil. The projects are run by private companies General Atomics and SAIC.

One advantage of algae over other biofuels such as ethanol derived from corn or sugar is that they do not compete with land use for food, and algae can be grown in brackish water or waste water. The fuel theoretically produces zero carbon emissions, since all the CO_2 released when the fuel is burned was absorbed from the atmosphere by the algae in the first place. Even when processing and transportation are taken into account, the fuel is still low carbon.

DARPA aims to obtain 50 per cent of all military-use fuel from renewable sources by 2016, and the Air Force plans to test a 50-50 mix of fossil fuels and renewable energy sources in its jet fighters and transport planes by next year. The driving force is not just money, but also the desire to create jet fuel in locations such as Afghanistan, where supply convoys are particularly prone to attack. Creating fuel in the field would not only save money and lives, but the infrastructure would be left behind to enable the production of sustainable fuel supplies to continue.

The Chinese government has also been looking at the possibility of using jet fuel produced from algae, and many commercial airlines are doing the same.