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Colorado Company to Take Algae-Based Fuel to the Next Level

By MATTHEW L. WALD

Solix's prototype bioreactor harvests oil from algae. A planned production plant in southwest Colorado will be similar to this operation, though significantly larger in scale. (Photo: Solix)

A Colorado company will break ground early next year on an algae farm that is intended to produce thousands of gallons of substitutes for gasoline and diesel at a rate per acre far higher than current biofuel projects.

Solix Biofuels, of Fort Collins, said on Monday that it had raised $15.5 million in capital and would begin with a five-acre plot to produce "biocrude." That will in turn be shipped to an oil refinery in place of crude oil, according to Douglas R. Henston, the company chief executive.

Investors include the Southern Ute Indian Tribe, on whose reservation, near Durango, the farm will be located; the Valero Energy Corporation, the refinery operator; and Infield Capital, an investment fund.

Algae has held special appeal for renewable energy researchers — and some investors — because the organism readily converts sunlight and carbon dioxide into a hydrocarbon fuel, producing an oil that can harvested for use as biodiesel. And the more CO2 present, the faster the algae grows. That holds the promise of cleaner-burning fuels that simultaneously scrub CO2 from the atmosphere during their production.

Algae can also regenerate at a remarkable rate, doubling its volume in a matter of hours under the right conditions, and yielding far more of its body weight in oil than any biofuel feed stock currently in use.

Solix has already achieved production of 1,500 gallons an acre per year at a test plot in Fort Collins, and the company is expecting yields of 2,500 to 3,000 gallons an acre per year, said Mr. Henston.

In contrast, soybeans, the main source of biodiesel used in this country, yields 50 to 70 gallons per acre.

But creating the right conditions for algae to serve as a biofuel feed stock at commercial scale remains an expensive proposition. Carbon dioxide needs to be pumped in from outside sources to induce the kind of rapid growth needed to make the process economically feasible. Water temperatures, too, need to be carefully controlled.

Solix uses a "photo-bioreactor system" to overcome these hurdles. These consist of long, narrow, sealed containers, immersed in water, into which carbon dioxide — harvested from a nearby natural gas well — and organic nutrients are circulated. Algae take hydrogen atoms from the water and carbon atoms from the carbon dioxide, to produce a hydrocarbon liquid, which is then recovered by centrifuge or solvent extraction.

The algae strain to be used in Colorado is a fresh-water variety, but other varieties, including marine algae, can be used, Mr. Henston said, because the system is “species agnostic.”