OVERCOMING THE CHALLENGE OF CHEAP SUGARS

Unmarketable Hawaiian Papaya Used to Produce Green Fuels

Gainesville, FL – January 2nd, 2012 - BioTork has successfully converted unmarketable Hawaiian papayas to fatty acids that can be refined into green fuels. This result is a first milestone in a developmental research project conducted in collaboration with the US Dept of Agriculture Pacific Basin Agricultural Research Center (USDA-PBARC) and Rivertop Solutions. The objective of the project is to assess the capacity of BioTork's proprietary technology to convert agricultural by-products into fatty acids, and its implications for the Hawaiian agriculture and military markets.

BioTork successfully developed strains of microorganisms, algae and mushrooms, which can eat papaya culls and convert the sugars in that waste stream into high value oil suitable for the production of advanced drop in green diesel and jet fuel. First laboratory results show that BioTork and PBARC have the capacity to turn an economic liability for Hawaiian papaya farmers into a high value co-product while addressing at the same time the need for domestic production of renewable non-petroleum-based biofuel. PBARC is taking the process a step further by conducting tests to use the meal (de-oiled algae and mushroom) as a high protein feed for fish. Tests are scheduled to start in 2012. In parallel, Rivertop Solutions is identifying all the agricultural by-products in Hawaii that can be used as a feedstock for biofuel production, assessing the potential benefits for Hawaiian farmers, and evaluating the impact on energy cost and security for the Hawaiian military.

Every year, hundreds of thousands of tons of fruit and vegetables are culled at the packinghouse and thrown away. Very often, growers don't even bother to harvest some produce because they know it will be culled at the packinghouse and they don't want to incur the cost of transporting the fruit. Thus, the percent of wasted produce is often much higher than is reported by packinghouses. This waste is a tremendous economic liability for farmers in Hawaii and the U.S. For example, as much as 40% of the papaya fruit grown in Hawaii are culled at the packing shed putting the industry on shaky financial footing. Tomato and banana farmers suffer from a similar situation.

If a use for culled, and unharvested, fruits and vegetables is found, it could go a long way towards improving the economics of many agricultural industries and securing abundant biomass for green fuel production. In order to make these options available to both crop growers and biofuel producers all over the US, BioTork is improving the metabolic capabilities of various microorganisms to convert different types of biomass into highly valued oil for green fuel production.

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Encouraged by the positive results of the first phase of the project, BioTork and PBARC are exploring a further collaboration to increase the yield of lipids from papaya and use of other fruit culls in the State of Hawaii for green fuel production.

Established in 2009, **Rivertop Solutions LLC** is a Hawaii based system engineering and economic development firm formed to coordinate government and private efforts in rural communities.

The USDA **Pacific Basin Agricultural Research Center** (PBARC) is located in Hilo, Hawaii. Its mission is to conduct research for the development of sustainable agricultural systems and pest management programs in support of Hawaii, the Pacific Basin, and U.S. agricultures.

Created in 2008, **BioTork, LLC** is a microbial strain developer for the biofuel industry. Based in Gainesville, Florida, the mission of BioTork is to improve the economics and efficiency of existing biofuels production processes and develop new ones.

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