GREEN SOURCE FUEL

Southern Areas: A Unique Opportunity for Bio-Fuels

1. Southern New Jersey still contains large areas of family farms within an hour of a large metropolitan area. Biodiesel manufacture can provide a source of income to farmers desiring not to take the alternative to subsistence farming: that of selling their property for development.
   a) Labor and fertilizer intensive crops can be switched to oil-seed crops, and fields lying fallow can be utilized to easily produce oil seed. These crops:
      - Are not labor-intensive;
      - Do not require large doses of petro-chemical fertilizers (some crops are even soil-enriching), but can benefit from an inexpensive potassium phosphate byproduct of biodiesel manufacture.
      - Can be harvested by machine...further minimizing labor costs;
      - Can be utilized locally minimizing transportation costs;
      - Does not require packaging of the farm product;
      - Can furnish biodiesel to the farmers; reducing their own fuel costs;
      - Leaves residual "seed-cake" that is salable for additional income;
      - Provide residual "green manure" that remains
        - to be plowed back into the soil to enrich it or
        - as a source of material for "cellulosic" ethanol production when a cost-effective method is feasible, (enzymatic production(?) as opposed to Fischer-Tropsch).
   b) Farm land area is a future production resource when algae-culture/other oil sources are feasible.
2. SNJ has a municipally-owned power plant, unique to NJ, in need of the means to:
   a) "hold the line" on fuel and fuel transportation costs;
      - Biodiesel or glycerin prices are not dictated by foreign factors if domestic raw materials are utilized;
      - Fuel transportation costs can be reduced to the extent that local fuel production can be utilized.
   b) Maintain air quality by reducing emissions
      - Biodiesel is effectively "no sulfur" fuel and all other emissions are as much as 50%, or more, lower than petro-fuels and natural gas.
      - At the time that a workable algae-culture system can be brought on line, stack emissions can, both, be reduced and utilized to enhance algae growth as a source of biodiesel oil stock.
3. SNJ is a Valuable Market Area:
   a) Is near major public and freight transportation hubs utilizing large quantities of diesel. Biodiesel:
      - can prolong the life of the engines that run on it;
      - can help clean city/country air by reducing smelly, dirty emissions and greenhouse gases
   b) Is near major population concentrations that:
      - Would be a source of retail diesel sales when appropriate vehicles are available;
      - Could be a source of retails sales of biodiesel as heating fuel.
4. Southern NJ is an area that can:
   a) benefit greatly from fuels that reduce emissions, either particulate or gaseous (including "green-house gases") and encourage the retention of a culture that retains its farming roots;
   b) be a model for the production and use of environmentally-friendly fuels.

5. Other Southern Areas to be integrated into the Green Source Plan:
    - Green Source will cooperate with organizations that are investigating high oil producing plants in the US. For example, the Chinese Tallow Tree, introduced to the southern US in the 1700's is considered an invasive "weed tree", but its nuts yield more oil per acre than the Oil Palm. It is also a source of nectar for honey. If taken advantage of as an oil source, it may be considered more of an asset, and less of a weed. Another possibility is the Castor Bean, of "Castor Oil" fame. By associations with southern US farming areas, there is the benefit of extending both the growing season for domestically produced feed stock and a larger market for southern growers.
    - Green Source is involving itself in reactivating areas in the Caribbean basin that were previously cleared for sugar cane, but are now lying fallow. Various tropical, high oil yield plants can grow there, producing more than twice the oil yield of any domestic oil seed plant. Green Source may involve itself in advocating a Caribbean region oil cooperative which will encourage a biodiesel economy and source of low-polluting fuel and fuel cost-savings to the islands.

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Further Plan & Goal Details:

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1. Plant and Production will be environmentally and community "friendly":

a) The Green Source production process is state-of-the-art, automated, and continuous:

- An efficient, high-yield, process which saves time and energy
- The continuous process is safer, faster, and needs less equipment, alcohol and catalyst than the "batch process". We consider batch processors to be suitable for small, or home operations, but the hours, or days, of settling and washing, and the amount of water used, to produce high quality biodiesel batches is inappropriate for larger production goals.
- High speed centrifuges and innovative recovery technologies minimize alcohol, catalyst and water use, yet produce ASTM standard product; recover as much alcohol as possible (without venting it) and also produce the cleanest glycerin byproduct possible.
- Rather than outsourcing analysis, the plant design includes a state-of-the art lab, on-site, to keep analytical costs / product quality at the highest standards of ASTM and the National Biodiesel Board. Green Source is considering making low-cost testing/analytical services available to small local producers (<1,000 gallons/yr).
- Green Source's plant will be as environmentally benign as possible:
    - No unpleasant smells, minimal noise, no release of pollutants;
    - Recycling of all byproducts;
    - Waterless "washing" of the biodiesel product will virtually eliminate waste water.
    - Solar heated/locally powered, to the greatest extent possible, by its own product/byproducts;
    - Flammable chemicals will be confined to the smallest possible, fire-explosion-resistant area;
    - Fully electronically monitoring for air quality.

b) Community Actions:

- To encourage biodiesel use, safety and micro-production, the plant will have meeting & training facilities to encourage clean, efficient, safe and economical production.
- Green Source will be pro-active to help farmers maintain their livelihood in south NJ. The classroom and meeting space will be made available for farmer networking.
- As a means of lowering utility costs and reduce emissions, Green Source hopes to partner with the local, municipal electric plant.
- Green Source will ensure that there are at least several retail pumps of biodiesel or biodiesel blends in the southern NJ area. Presently, there is production, but no known public pumps in NJ.
- Green Source will make biodiesel available for use as a heating fuel as a further means of cleaning the air in our semi-rural community.

2. Raw Materials-Source & Type:
   a) Utilization of waste vegetable oil and animal fats to the greatest extent possible...less expensive material than new oils, but a source of funds to small operators that produce it
   b) Existing technology and sources for new vegetable oils, as economically feasible, will stress:
      - Locally grown oil seed:
        - Minimizes transportation costs.
        - Will encourage use of fields lying fallow by providing demand for a low labor oil seed crops, which, hopefully, can be soil enriching crops as opposed to soil depleting varieties.
        - Will provide sources of income, that may minimize loss of local farm to development, and provide business management, education and diversification ideas which could include:
          - expansion into edible oil sales, exotic oils, etc.
          - encouragement of farm use of biodiesel to lower fuel costs and local fuel emissions.
        - Will provide the option for a local seed pressing cooperative which will provide an additional source of income from sales of the residual seed-cake to animal farmers. (Shown to be desired by cattle, raises milk productivity, reasonably priced).
        - Green Source will work to dispense knowledge about biodiesel and encourage home production or production by small farming coops.
      - Domestic oil will be sourced from oil crops that limit soil depletion or have low dependence on petro-chemical fertilizers, such as soy beans and peanuts, as opposed to crops like corn
      - Imported oil, will only be purchased from producers utilizing previously cleared land. We will not encourage the destruction of rain forests to grow more oil seed.
   c) New Oil Sources & Technologies:
      - Green Source will team with local researchers to encourage oil from algae technology:
        - Promises to give huge oil yields per acre
        - Has the ability to "eat" nitrogen, CO2 and carbon monoxide smoke-stack emissions.
3. Green Source Fuels sister company, Green Source Organics, plans to be a resource for other manufactures of biodiesel by purchasing their glycerin byproduct and recycling it into more valuable chemical products.

For More Information, Contact Green Source Fuel