Western Port Greenhouse Alliance Agricultural Emissions Project

Idea No: 4 **Footprint Rating:**

Blend vegetable oil with diesel fuel

Description: Originally, Rudolf Diesel - the inventor of the compression ignition engine, designed it so that it would run on vegetable oil, but cheap fossil fuels were abundant and became the prefered fuel source. Although carbon emissions resulting from the combustion of vegetable oil is equivalent to the combustion of petroleum diesel, the amount of CO2 sequestered during the plant's growth can make using vegetable oil as a fuel source carbon neutral. Two problems that arise include - the vegetable oil solidifying in cold temperatures and the oil changing its molecular structure in high temperatures causing it to permanently solidify. As a result of this, cold starts can be impossible and blockages in the system can cause engine failure in a short period of time. Both these problems can be solved by mixing the vegetable oil with petroleum diesel at a ratio of around 1:8. Biodiesel, which is the result of esterification of vegetable oil can be used as a fuel in its own right.

Environmental Benefits as opposed to the current system

% reduction in GHG emissions:	2.90%
% increase in water efficiency:	0.00%
% reduction in waste to landfill:	0.00%
% increase in production:	0.00%

Benefits: Reduced emissions and fuel costs

Costs: $350

Savings: $2339 in diesel costs per year
6.3t CO2 per year

Implementation/Monitoring/Reporting
The correct ratio of vegetable: petroleum diesel must not be exceeded or else engine damage may occur.

For more information see the following websites:

http://students.umf.maine.edu/coolbrbt/public.www/biodiesel.jpg

http://www.dpi.vic.gov.au/DPI/nrenti.nsf/93a98744f6ec41bd4a256c8e00013aa9/77f9ee5a0aed2a6aca257602001a9b47/$FILE/BioFuels06.pdf

http://www.shortcircuit.com.au/warfa/paper/paper.htm

http://www.vegetableoildiesel.co.uk/index.html