


<p>Company Name and Contact Details:</p>	
<p>NZ Institute for Plant & Food Research Ltd Rocky Renquist, Senior Scientist Website: www.plantandfood.co.nz email: Rocky.Renquist@plantandfood.co.nz T: +646 355 6208 F: +646 351 7050</p>	<p>Core Skill(s):</p>
<p>Plant and Food Research, recently created by a merger of HortResearch and Crop & Food Research, is a New Zealand Crown Research Institute. The New Zealand government is our major shareholder.</p>	<ul style="list-style-type: none"> • Plant and environment science • Crop agronomy/sustainability • Soil science, land use • Crop breeding
<p>While most current research relates to food crops, the core skills have also been central to past development of bioenergy technologies including rural biogas production. It is through use of purpose grown energy crops that the scale of biogas production can be increased several fold over even full utilization of feedstocks from wastestreams.</p>	<p>Biogas Focus:</p>
<p>Plant & Food Research and its direct predecessors has for decades done leading research in the area that has come to be called sustainability. The thinking of the more than 100 scientists who work in this area has always revolved around the value of healthy plants and soil systems and the role of nature in providing essential services to humans such as water for crops and purification of wastewater.</p>	<ul style="list-style-type: none"> • Crop species screening • Biogas yield from different crop tissues • Life cycle assessment of energy supply
<p>In the late 1970s MAF Technology in Invermay did the foundation research for use of anaerobic digestion (AD) of crops and crop residues, and the DSIR Crops Division, also a forerunner of Crop & Food, researched species selection and agronomy of energy crops that could enable large scale biogas production in NZ. With the recognition of the two major challenges to our current way of life, peak oil and climate change, the need for research in the area of sustainability has been dramatically ramped up.</p>	<p>Core Product/Activity:</p>
<p>Therefore, the P&FR institute focus on sustainable food production leads to a clear recognition that the energy used in agriculture needs to be renewable. While electricity supply to farms could be made renewable by means outside the farm sector, fuel supply may sensibly be approached as a technology that can come from within the sector. There are already many surplus crop residues that could be utilized in biogas digesters and energy crops are possible to grow sustainably in order to raise the scale of production to meet the fuel needs of NZ agriculture and rural freight. The use of biomethane in place of diesel is proven as feasible and is supported by other new technologies (e.g., new low pressure gas tanks and conversion to liquids if desired).</p>	<ul style="list-style-type: none"> • Knowledge systems, consultations
<p>We will facilitate biofuel production that is sustainable and not in competition with food crops. This will be achieved by using digestate on new energy crops along with use of legumes in the cropping system to create a surplus of N fertilizer for use on food crops.</p>	<p>Key Project Activities:</p>
<p>Plant & Food Research scientists' expertise also enables research to enhance biogas production through better feedstock pretreatment, optimizing digester microorganisms, and interfacing AD with algae production for biodiesel oil. We also have the expertise to breed custom energy crops, such as spineless gorse.</p>	<ul style="list-style-type: none"> • A Closed Loop N-Supply project that links new biomass production on marginal land to AD and use of digestate to create surplus N fertilizer
	<p>Leading Edge:</p>
	<ul style="list-style-type: none"> • We facilitate biofuel production that is sustainable and not in competition with food crops. Biogas research expertise includes feedstock pretreatment, digester microorganism optimization, interfacing AD with algae production, and use of digestate on crops
	<p>Investment Base:</p>
	<ul style="list-style-type: none"> • New Zealand
	<p>Employees:</p>
	<p>900 (over 100 in relevant crop & soil research)</p>
	<p>Production Capacity: NA</p>