

## **“Tallow as a Sustainable feedstock for Biofuels”**

### **Alan von Tunzelman**

Alan von Tunzelman is General Manager of [PVL Proteins Limited](#), a medium sized rendering processor based in Auckland city. He also represents the New Zealand Renderers Group (he is an executive member and past Chairman), and the World Rendering Organisation (he is the 1<sup>st</sup> Vice President).

**In this article Alan writes about the potential that tallow offer to New Zealand as a sustainable feedstock for biofuels.**

For a number of years Tallow was not a preferred option as a Biodiesel feedstock because of the technical problems associated with its properties in cold climates. These problems have now been consigned to history. Recent developments in biodiesel processing plants have made Tallow a common, popular and very sustainable feedstock in many countries.

Tallow’s sustainability is its biggest advantage. This is particularly so in New Zealand, where tallow is just one of many by-products produced during the slaughter of various species of livestock for both the export and local markets.

The primary reason for the breeding and slaughter of livestock is to feed a hungry world. In addition there are strong industries that utilise other raw materials from this slaughter of animals. Offals, Leather, Wool, and Pharmaceutical ingredients are produced, as well as Meat & Bone Meal, Dried Blood and Tallow from the associated rendering plants.

Most New Zealand rendering plants are attached to slaughter facilities and many are particularly efficient in energy utilisation. Following the oil shocks of the 1970’s the Meat Industry Research Institute of New Zealand commissioned the design of rendering technology that was considerably more energy efficient than existing technologies and also enabled the production of better quality end products from ordinary raw materials. Over the following 30 years many New Zealand rendering plants have been replaced by MIRINZ LTR systems or developments from them.

At our plant, PVL Proteins Limited uses less than 50% of the energy of a conventional plant and in addition heats a significant volume of the daily hot water requirements for the adjacent Auckland Meat Processors Slaughter Plant. (The Auckland Meat Processors Slaughter Plant has daily needs of 304 GJ, to heat process and steriliser water of which PVL is able to supply 136 GJ from heat recovery.)

At the same time as they produce useful products, rendering plants play a major role in eliminating thousands of tonnes of waste that would otherwise be destined for landfills with the associated problems of odour, rodents and disease. Rendering plants are a critical element of NZ’s Biosecurity Defence Strategy.

In New Zealand we currently produce almost 150,000 tonnes of tallow that is easily and economically convertible to high quality Biodiesel. To date there has been neither incentive nor encouragement to become involved in this industry save for a short period when there was mandated level of biodiesel inclusion in diesel. This requirement was subsequently withdrawn.

It would be contrary to both good science and common sense if Tallow was not declared a sustainable feedstock for biofuels, particularly in New Zealand.

We saw strong supporting evidence for tallow as a sustainable feedstock at the recent *World Sustainable Biofuels Awards*, held in Brussels on March 17<sup>th</sup> 2009, where the following three awards were presented:

Award	Winner
Sustainable Bioethanol Award	SEKAB
Sustainable Biofuels technology Award	Petro Algae
<u>Sustainable Biodiesel Award</u>	<u>Argent Energy</u>

Argent Energy, winner of the Sustainable Biodiesel Award, uses tallow as its principal feedstock, collected from a very large area within the United Kingdom. I am very familiar with the Argent Energy operation, having both visited their Motherwell plant and worked closely with them in New Zealand.

That a UK company using tallow as a feedstock has received the preeminent award for sustainability suggests that the use of tallow as a feedstock in New Zealand must surely be sustainable. The industries involved (Growing, Slaughtering and Processing) in this country are significantly more efficient than in the UK. We boast:

- More modern and efficient rendering plants
- Slaughter plants that are also more modern and efficient, as well as multi-purpose
- Dramatically more efficient farming methods
- The ability to locate Biodiesel plants at the most appropriate locations
- The ability to blend Biodiesel into diesel where it is most efficient.

In the USA the EPA has determined the Greenhouse Gas profile for RFS2 in favour of waste vegetable oils, and yellow grease ( Tallow). This finding by the EPA relating to the implementation of the RFS2 follows the EPA's analysis of lifecycle GHG's from renewable resources has found that waste vegetable oil and yellow grease(Tallow) are the top sustainable raw material feedstocks for biodiesel. A criticism of biodiesel made from virgin crops is that it compromises land not historically needed for farming.

CSIRO Australia, in a report (KS54C/1/F2.29) commissioned by Caltex Australia Limited show that Biodiesel from tallow is very sustainable when compared to alternative feedstock sources. It might be added that this study, if undertaken with a typical NZ MLTR process would show even greater benefits. They also differentiate between Tallow and used cooking oil on the basis that used cooking oil is more of a waste product than Tallow. For the past fifteen years in New Zealand used cooking oils have had a steady sale in markets also occupied by lower grade tallow so they should not be rated any differently. Probably less so in fact as there is quite an energy cost in saving, collecting and delivering this used cooking oil to potential Biodiesel plants as it is available in small volumes from many widely distributed locations.

In my various roles I have had the opportunity to access many aspects of international

rendering. From a global perspective the New Zealand industry is small but is a leader in very important areas. Our geographical isolation has helped us to remain free of BSE and all current Exotic Diseases. Our regulatory framework - being robust, fair and scientifically based - has assisted, but the greatest advantage the New Zealand rendering industry has is the science and engineering work undertaken in the 1970s and 1980s. This has resulted in a very efficient operation that can respond promptly to changing needs.

As an industry, these efficiencies, our regulatory framework and our own industry efforts have seen us prosper in a world hungry for New Zealand's protein products. Our Tallow has enjoyed record prices because of our reputation and marketing efforts. With the appropriate regulatory framework I envisage a time when this industry could be a standard bearer in a wide range of environmentally positive ways. We can engage in areas such as Carbon Credits, Emission Trading Schemes and Sustainable Energy, and can make a worthwhile contribution towards New Zealand's environmental direction.

More than any other industry, rendering can be part of the solution to a host of problems.

For the first time in history, farmed fish exceed sea run fish. Animal proteins will play a major role in aquaculture feeds in the years ahead. Just another example of the versatile uses of rendering.

Make the most of this opportunity to declare Tallow a Sustainable feedstock for biofuels. You will find an efficient, responsive and responsible industry ready to play a pivotal role in the way forward.

Thank you for the opportunity to present this material. Comments or questions welcome to [alan@auckmeat.co.nz](mailto:alan@auckmeat.co.nz).

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8<sup>th</sup> May 2009