



GPI

GP International LTD

Submission for Productivity Commission Draft Report on a Low Emissions Economy for NZ

In September last year we made a submission to the Productivity Commission relating to both Renewable Diesel Fuel – made from cellulosic feedstocks - and the giant woody grass called Miscanthus. With neither Miscanthus nor Renewable Diesel Fuel (RDF) being mentioned at all in the draft report, we wonder whether our submission was received at all. So we have appended our September submission at the end of the current comments.

Primarily, for this current submission, we have been through the “At a Glance” document with peripheral reference to the main document itself which is far too voluminous for ordinary business people to read in total.

This submission strongly supports the focus of New Zealand working rapidly to transition to a low emissions economy. The statement that this is to be achieved while continuing to grow incomes and well-being is important because it is very easy for people to become so caught up in the low emissions objective that they forget how important it is to maintain or grow national and individual incomes and well-being. We believe that the objective of transitioning to a low emissions economy can be achieved while also:

- Boosting national income;
- Providing landowners with a very productive alternative crop that is itself better than carbon neutral;
- Increasing New Zealand energy security;
- Increasing exports;
- Reducing imports;
- Boosting farm production; and
- Reducing leaching of nitrogen into ground water.

Specific comments are as follows:

1. Modelling.

It is very important that it is borne in mind that all modelling is only as good as the information on which the model was set up. Because we are completely certain that the modelling undertaken for this enquiry does not include anything about RDF or Miscanthus, it has a gaping hole in its assessment. There is also no mention in the report of biochar which itself can be a very significant factor and allows the RDF production process to be better than carbon neutral - making electricity look positively polluting in greenhouse gas (GHG) terms. Broadly speaking, a high level assessment of RDF production has shown that for every litre of RDF produced a net 1.47 kg of

CO₂ is sequestered in the production process which expands to 4.15 kg per litre of RDF used, if fossil fuel substitution is also taken into account.

2. *Transition costs.*

If the relevant New Zealand authorities were to take the information that we have been trying to present for several years now and decided to assist in getting it applied in the area of renewable liquid fuels, there would be no transition costs and NZ could show itself to be an international leader in GHG emissions reduction, rather than aiming to just be similar to other developed countries.

We agree that the sooner emissions reductions commence, the less disruptive things will be. But we are very conscious of the fact that this information was presented to the previous government 3 years ago and then appeared to have been to all intents and purposes ignored. Contact with the current government, starting prior to last year's election, seems to be eliciting a similar lack of response with no real interest being shown by those who are in a position to make decisions.

One of the problems that we may have is that the answers that we are proposing sound too good to be true. If this is the problem, the relevant officials need to meet with us to be shown how it is all true and that the future for New Zealand in these areas is extremely bright. Not only that but behind it all, NZ will still have the ability to maintain primary industry production while improving the environment and particularly water quality. So our support is strongly behind the Stabilising Decarbonisation pathway.

3. *Replacing fossil fuels with electricity.*

This is stated to be one of the "key drivers", but our view is to query why we would want to replace fossil fuels with electricity when the electricity we currently have available is at least 15% non-renewable. It would be much better to replace the fossil fuels with a completely renewable fuel such as RDF that is better than carbon neutral. This then provides the opportunity in the short run to tolerate some other activities that will continue to emit greenhouse gases - such as electricity - while still meeting NZ's overall carbon zero goal.

We are aware of and to some extent involved in, a proposed project, supported by substantial private funding, to use technology similar to that used for RDF production, to generate electricity from biomass. Because of associated biochar production, this electricity would be better than carbon neutral. But we are certain that the officials who advise the Productivity Commission have no knowledge of this possibility and therefore do not factor it into any of their calculations or their advice. As a result, the opportunity to have more of these plants in strategic locations throughout NZ, will not even be considered.

4. *Changes in land use.*

We agree that there will be some land-use changes and that there are some significant areas of hill country in NZ that would be better planted in forest, ideally production forest. This is really about soil stabilisation and reduction in downstream flood events, so has very little to do with GHG emissions. Such afforestation will of course act as a carbon sink for some time but as is stated in the report, it cannot be regarded as a long term emissions reduction solution.

But it also must be remembered that the recent biofuels roadmap produced by Scion, although very comprehensive, was produced by an organisation that has a strong bias in favour of forest and particularly pine forest. This conflict of interest is never highlighted in any of their publications and unfortunately this bias caused much of the biofuels roadmap to be meaningless. It seemed to us that no account at all was taken of the financial practicalities of what was proposed and we think that the role of forestry in long term reduction of emissions was grossly overstated.

Land-use changes are already being undertaken by a few enlightened landowners and we expect this to expand quite quickly in the next few years. Land that previously was in low productivity agricultural use is being changed to grow Miscanthus, with many positive benefits including soil stability, alternative income streams, and ability to significantly reduce nitrogen leaching, to name just a few. When this is combined with the RDF technology, the effect of there originally being net GHG emissions from this land will be reversed and this will be a significant factor in helping New Zealand to reach an overall carbon zero position. At the same time, the positive economics involved mean that apart from initial financial investment, there will be no transition costs.

There is ample suitable land available to grow Miscanthus for the wide variety of uses that it has for production of bioenergy.

5. Climate mitigation policies.

As far as we are aware, the only real attempt at climate mitigation policies in NZ has been the introduction of the New Zealand Emissions Trading Scheme (ETS). But when the ETS was set up, the then government missed the opportunity to make the rules sensible and based on the effect of the rules on carbon dioxide in the atmosphere. They instead chose to blindly follow the Kyoto rules which everybody involved knew constrained activities and did not make sense in terms of GHGs in the atmosphere.

As an example, if an owner of pre-1990 radiata pine forest harvests it and replaces it with another crop of radiata pine that is capable of absorbing sufficient carbon dioxide to make about 10 tonnes of dry matter (20 tonnes green) per hectare per year, there is no penalty. If instead they replace that harvested forest with indigenous forest that is capable of absorbing sufficient carbon dioxide to only make perhaps 3 tonnes of dry matter per hectare per year, there is no penalty. However, if they replace that harvested forest with Miscanthus stands that are capable of absorbing sufficient carbon dioxide to make 20 – 30 tonnes or more of dry matter per hectare per year, they are penalised! This is simply because the Kyoto rules, which were written into the NZ ETS legislation, have virtually nothing to do with carbon dioxide in the atmosphere.

So in terms of reduction of GHG emissions, the ETS is in our opinion a complete failure.

6. Government signals.

The document to which we are referring says “The Government must signal strong commitment to the transition, be clear about its policy intent, and establish broad and enduring political support.” We completely agree with this but what is not said is that the government needs to meet with people who have access to innovative emissions reduction technologies, and the government should play a significant part in supporting investment in such technologies.

One thing the government should do is to look at what is already happening overseas such as in California or the EU. California has a busy and expanding market for RDF and the EU has drafted into its regulations, specifications for RDF that differ only very slightly from fossil fuel diesel. NZ has specifications for diesel and separately for biodiesel. But it does not have any specification for RDF. That ought to be very easy for the government to fix by adopting the current EU specifications for RDF, because our normal diesel specifications seem to be modelled on the EU ones. Being regulations, it does not require legislation and could be done promptly if the government had the will to do so.

If the Productivity Commission wanted to meet with senior staff of the California Governor’s Office to discuss how they are handling similar things – including RDF and biochar - we could make the introduction.

7. Emissions pricing.

We agree that emissions pricing has to be realistic - meaning realistically high - to have any effect on the investment decisions. But at the same time there have to have effective and sensible rules. (See our comments in Section 5 above about the ETS). When a forest owner is deemed to have released to the atmosphere at the time of harvest, all the GHG that had been absorbed when the forest was growing, it is clearly not sensible and is simply an attempt to reduce the effort required for documentation of what is going on.

So if somebody else purchases logs, timber, chips, or even sawdust, they can use these in any way they like including burning, to create energy, and can legitimately claim that they have not released any CO₂ to the atmosphere. This is because the CO₂ is all deemed to have already been released to the atmosphere at harvest. So the forest owner who grew the forest absorbing the CO₂ and who harvested the forest, carries the negative while the person or company that actually releases the CO₂ has no penalty whatsoever. In fact, if they burn this material in place of fossil fuels, they can probably claim some carbon credits.

We have trouble understanding why the Minister for Climate Change did not immediately raise the \$25 cap within the ETS when he came to power and why he has no plans to do anything about it until the end of next year. He must have known that the expectation would be that the price of NZU would go up significantly so instituting an interim increase in the cap, perhaps to \$50 would have begun to have some impact on people's attitudes to emissions making them start to take biomass for energy seriously. Once again this was an opportunity lost. Significantly delaying a decision as has been done simply makes the job of reaching carbon zero by 2050 so much harder while also sending a signal to the public that this is not an important decision.

8. Broader GHG emissions pricing.

Ultimately, agriculture will need to be brought into the ETS but good data shows that with the right sort of management, methane emissions from stock can be significantly reduced. Part of that reduction is achieved by adding very small quantities of biochar to stock feed. This has been shown by highly reputable researchers internationally to reduce methane emissions by over 20%. Other on-farm action has been shown by the same researchers to magnify that reduction to over 40%. As was said in our original submission last year, we have a major veterinary practice that is keen to carry out formal trials/demonstrations of this in New Zealand to get it properly documented here. By itself, that action could go a considerable distance towards reducing New Zealand's GHG footprint.

Part of the beauty of doing this is that another effect of this use of biochar is to increase the growth rate of stock which itself will more than make up for the cost of the biochar being added to the feed.

The other factor that is not mentioned in the Commission's draft report or any other report that we have seen is the potential impact of some policies on rural populations. Communities need to be a certain size to continue to function effectively and this should be taken into account in any policy development. Some years ago we put together a proposal that would allow increased afforestation on susceptible hill country while maintaining rural populations and perhaps even enhancing them. The one factor that was missing at the time we did this exercise, was a credible entity that could provide the investment funding and which landowners could be certain would be around in the long-term. No such entity existed then, but this is a clear opportunity to utilise the Super Fund in a way that is commercially viable, environmentally and socially responsible and will give an excellent long-term return on investment.

If needed we would happily update this proposal and make it available to the Productivity Commission.

9. *Stable and enduring laws.*

As stated above, the comment about NZ lacking clear and stable climate change policies really should say NZ has lacked clear, stable and common sense climate change policies.

There is a lot that is not fully understood by people involved in businesses that could play a significant part in reduction in GHG emissions. An example is the question, when carbon is effectively permanently sequestered as biochar, is the producer of this biochar able to claim the relevant NZU credits? If they cannot, then much of the climate justification for changing from fossil fuel diesel to RDF will disappear.

Another example is the fact that growing Miscanthus stands increases soil organic matter to such an extent that international studies have shown something in the order of 2 tonnes of carbon per hectare per year as being effectively sequestered. This is in addition to the GHG benefits of using Miscanthus for biofuel.

We have a detailed Life Cycle Analysis (LCA) of Miscanthus growing in New Zealand that was done by an independent New Zealand company. This has shown that simply growing and harvesting Miscanthus is better than carbon neutral. This study showed the energy out per unit of energy in with Miscanthus to be 129:1. Many other details in the LCA are currently confidential so have not been included in this submission. But we are fairly certain that because officials are not familiar with this crop - as they are not familiar with RDF - such GHG benefits will not be allowed to be counted.

As a result, if there is to be an independent expert body appointed to provide advice to the government on emissions budgets, it needs to be staffed by people who either have wide ranging expertise well beyond that available within the CRIs, or people who have a sufficiently outward-looking and holistic perspective that they are capable of taking in information that broadens their horizons and increases their knowledge. A really good example of this sort of person is Professor Steve Wratten of the Bio-Protection Research Centre of Lincoln University.

Our impression is that if comment is made to or information is produced for government officials by a small company such as ours, very little notice if any is taken of it. On the other hand, if exactly the same information came from a large company it would be regarded as credible. This condescending attitude to smaller companies needs to be changed.

10. *New technologies and funding.*

We agree that new technologies are needed and that in most cases New Zealand will need to adopt technologies that have been developed overseas. However as things currently stand officials put barriers in front of companies wanting to adopt technologies developed overseas, presumably because they were not aware of how effective the technologies are. Our access to RDF technology is a classic example where in spite of talking with many politicians, government officials and CRI staff for some years, absolutely no government support has shown any sign of appearing. Not even positive verbal public comments.

11. *Funding.*

Much of government funding support for businesses is oriented towards export promotion and none or at least very little seems to be oriented towards import substitution. So having access to technology that has been commercialised overseas and that could make better than carbon neutral RDF with it, does not seem to be something that has any prospect of achieving support within the

existing government business promotion activities. This is in spite of the fact that along with purpose-grown feedstocks such as Miscanthus, this technology could take NZ waste products - such as cereal straw and in some regions, forest industry processing residues.

For a small company having to come up with 50% of the funding or more when the funding required to get things going to the point of attracting private commercial investment is in the order of a few hundreds of thousands of dollars, is an impossible task. As a result access to such technology is unlikely to be turned into implementation of that technology in NZ.

In our view, the Productivity Commission needs to push strongly to get funding that is intended to facilitate innovation and technology adoption, made available to those who have shown that they have invested significant amounts of energy, time and money over the years to achieve implementation of low emissions technology.

12. *Transport emissions reductions.*

We agree that transport is a sector where deep emissions reductions can be achieved and electric vehicles (EVs) do offer the potential to take on part of this role – at least in the short term. But it seems to us that little or no notice is taken of the non-renewable aspects of use of EVs such as where they will be getting their supplies of both cobalt and lithium for the batteries or how frequently batteries will need to be changed. In addition, as has been stated previously in this submission, there does not seem to be any notice being taken of new and emerging technologies such as the technology that has been developed in the USA for RDF production. It seems as if the multitude of benefits from this will never be taken into account simply because the decision-makers and their advisers know nothing about them.

13. *Low emissions fuels.*

The focus should not be on the vehicles - as seems to be the case at the moment. The focus should be on the emissions. So a vehicle with a diesel engine should not be penalised when it can in fact be run on RDF that is better than carbon neutral. In addition the actual particulates and other emissions from a diesel engine running on RDF have been shown to be less than those emissions from a vehicle running on normal diesel.

The suggestion that there should be introduction of a “feebate” scheme based on the “emission intensity of the vehicle” is in essence completely ridiculous. The actual GHG emissions that come from a vehicle, while depending to some extent on the type of motor that it has, are much more dependent on the fuel that is to be used. It would be a terrible shame if a “feebate” scheme were to be put in place and result in vehicles that are capable of using fuel that is better than carbon neutral – RDF - were penalised, simply because emphasis was being put on the wrong thing - the type of motor. The emphasis should instead be on what really matters - the emissions.

We think it is a shame that there is so much focus on promoting use of electricity, which is not carbon neutral. It is even worse if, as many people consider, you should not count hydro as being sustainable or carbon neutral. It seems clear to us that the reason for this focus is simply that the people developing these documents and making the relevant decisions are ignorant of the alternative technologies that do exist.

14. *Transport planning.*

We agree that the government should make emissions reductions goals more central in government transport planning. But to do this properly, the government has to be aware of the possibilities.

Comment made before the last election by the now Prime Minister that she would want KiwiRail to drop its purchase of diesel locomotives and revert to electric locomotives, was no doubt made in

the heat of the election campaign but revealed a complete ignorance of the very positive possibilities with use of RDF. We have since pointed this out to the government and also to KiwiRail. So far, there has been no effective interest shown by the government, and KiwiRail is quite clearly sufficiently sceptical of what we have told them about RDF that they are essentially not interested at present.

I have little doubt that if exactly the same approach had been made to the government and KiwiRail by a large company such as Z Energy, KiwiRail would have taken it seriously and perhaps the government may have done so too.

15. *Eliminating GHG emissions from electricity.*

The document says “Given current technology, it could be very expensive to completely eliminate GHG emissions from electricity because of the need to have backup generation (currently supplied by fossil fuels)...”

The clear assumption here is that such backup generation can only be supplied by fossil fuels. This is simply incorrect.

16. *Low emissions baseload.*

Because of the feasibility of producing RDF in New Zealand, not only could backup generation be supplied by use of RDF but baseload generation could also be supplied by use of RDF. In fact there is a proposed project that has had substantial private funding approved, subject to completion of some of the paperwork including the Miscanthus production aspects, for a significant sized biomass-fired electricity generation facility that will use much the same technology as is used for RDF but will burn the syngas directly instead of using it to make RDF.

Once again, use of this technology for generation of electricity could not only completely eliminate the use of fossil fuels for electricity generation, but it could also produce electricity that is better than carbon neutral. Surely this is an objective that should be of sufficient interest to NZ authorities that they actually will follow up on it rather than just ignoring it as they seem to have done in the past.

There is no reason why eliminating fossil fuel backup generation entirely should raise electricity prices and there is every possibility that electricity prices may in fact be lowered by the use of the RDF and related technologies for electricity generation. With hydro power generation being susceptible to dry summers and with solar and wind power generation being susceptible to cloudy weather and/or no wind respectively, it would seem to us that establishing both baseload and backup generation using the RDF technology and potentially using Miscanthus as the feedstock, should be a clear target for New Zealand.

17. *Emissions price driving investment in electricity generation.*

The emissions price in the NZ ETS is insufficient to have any significant impact on anything and the uncertainties within the system as to what can and should be counted mean that the emissions price will not drive investment in electricity generation.

In addition to generation of electricity, the project mentioned in the first paragraph of Item 16 will be a major producer of biochar. But as things currently stand, it is very uncertain as to whether such permanently sequestered carbon is able to be counted in the NZ ETS. It appears not. As such, the prospect of projects like this going ahead is not influenced in any way by the New Zealand emissions price. If such biochar were to be clearly included in the NZ ETS, similar biomass fuelled electricity projects could easily be set up in other parts of New Zealand.

It is our opinion that if the government is in fact serious about reducing emissions rather than just talking about it, they do need to act instead of just talking some more. So far all ministers and officials who have been contacted about the possibilities that can be achieved with Miscanthus and RDF - and there are quite a few - have responded with a small degree of interest in some cases, and a universal lack of action in all cases. The impression we are left with is that the government is not at all serious about reducing emissions, particularly if biomass is to be a large part of the answer. If biomass-fired electricity projects are planned with government support or encouragement, it will be easy to establish and produce the required quantities of biomass.

18. Targeted interventions.

The report says that the main emissions mitigation opportunities are in agriculture and transport. While this is true, apart from what seems to be ivory tower research in various CRIs, there does not seem to be any serious government interest in moving in any way in these areas. The government has shown no interest in following up on information that has been presented to it about significant emissions mitigation opportunities in agriculture and transport.

For example:

- Simply establishing and growing Miscanthus stands is something that has shown to be carbon negative and therefore should be being publicly encouraged by the government.
- Utilising harvested Miscanthus in place of coal is clearly beneficial in terms of emissions mitigation.
- Cereal straw which is currently generally regarded as waste material and is mostly burnt, can be used to produce RDF (and biochar) and this is also clearly beneficial in terms of emissions mitigation.
- Utilising harvested Miscanthus for producing RDF is even more beneficial in terms of emissions mitigation than using it to replace coal.
- Utilising forestry offcuts and associated forest industry processing residues for the production of RDF is also clearly beneficial in terms of emissions mitigation. In addition, in regions where there are no markets for wood chips or pulp logs such utilisation could also significantly benefit the forest industry.

But in spite of all this being pointed out to politicians and government officials, nothing has been done by the government to follow up on it in any way.

We understand that there is also the possibility of utilising Municipal Solid Waste for the production of RDF and biochar but there does not seem to be any interest from officialdom in looking at doing this in New Zealand either.

Our view is that the government does need to look seriously into these technologies and once they are satisfied that they are commercially viable, environmentally beneficial, and practical in terms of scale that is suitable for New Zealand (i.e. small enough), they should in fact actively favour such technologies.

19. Opportunities and challenges.

Transition to a low emissions economy certainly presents many opportunities for New Zealand but contrary to the assumptions made by government officials and indeed by the Productivity Commission, the effect does not need to be an increase in costs of energy, food or transport.

Growing Miscanthus appropriately on farms, can not only increase existing farm production, but can also generate a useful product that can be used in a variety of ways. For farmers, reliable income that is not associated with farm food production prices and that is not impacted by

NZD:USD conversion rates, will mean that they will be more likely to be able to maintain much more stable and reliable food prices.

Production of RDF, with or without Miscanthus as the feedstock, can stabilise energy prices - electricity and diesel - and could potentially have the ability to reduce them relative to those that are dependent on imports.

This stabilising of prices - potentially in the long-term – can be done at a level that is low enough to be benign in terms of low income households. If such production of RDF were to be encouraged, there would be no need to offset any impact on such households through the tax and welfare system.

In addition, with stable prices for electricity and for RDF at sensible levels, the only major employers who may be impacted would be those who are dependent on maintaining the status quo in terms of energy production, pricing and use. The funds that would otherwise be used by the government for retraining - as mentioned in the draft report - could perhaps be used to facilitate the establishment of RDF and electricity production facilities.

20. *Achieving a low emissions economy.*

As the draft report says, achieving a low-emissions economy is challenging but it is achievable. In our opinion, it is much more achievable than the Productivity Commission, government departments, or any government agencies realise. We are not claiming to have a silver bullet to cure all the problems, but the technology that we have available and are keen to implement in NZ, can overcome several of the challenges. In addition, by being better than carbon neutral, these technologies can also make up for the fact that in other areas some industries that are essential for New Zealand will continue to have some net GHG emissions.

It is correct that the right institutions and policy settings need to be in place and part of that has to be a policy that the government and its institutions will take serious notice of smaller companies that are proceeding to develop or bring to New Zealand, technologies that will have the ability to move New Zealand rapidly towards achieving a low emissions economy.

But delaying things as seems to be the case so far, both with the previous government and the current government, should not be an option. Tight, challenging and firm deadlines need to be set - much tighter and more challenging than would be perceived to be realistic by government officials and big company personnel. Where appropriate, government financial assistance should be made available to facilitate the process required for investment in these currently available new biomass-based technologies in NZ.

We have no doubt that the NZ biomass community – as represented by the Bioenergy Association of New Zealand – will be able to create, harvest and supply the necessary biomass resource wherever in NZ it is needed, to achieve the Low Emissions Economy aims of the Productivity Commission.



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Managing Director
1 June 2018



GPI

GP International LTD

September Submission for Productivity Commission Low Emissions Economy

Because of competing priorities for our time, the submission is of necessity abbreviated. It really deserves to have a lot more time put into it but submitting a submission in summarised form is preferable to trying to spend a lot of time on it and missing out on the deadline.

Key points.

Renewable diesel fuel

1. GP International Limited (GPI) has access to commercially proven technology from the USA that allows renewable diesel fuel (RDF) to be made from a range of feedstocks. At present, we are focusing entirely on cellulosic feedstocks. It should be noted that RDF is **not** biodiesel but is a direct substitute for mineral diesel, being a product that meets and in many cases better the New Zealand specifications for diesel.
2. A co-product of the process is high quality biochar which has a wide variety of uses including plant growth enhancement, filtration, an additive to bitumen that makes roads last longer, and potentially agricultural use for reduction in greenhouse gas (GHG) emissions from livestock. (See Item 11 and following). Graphene is another potential co-product of this process.
3. Production of RDF within NZ has obvious economic and GHG emissions benefits. These include:
 - Reduction of NZ's expenditure on purchase of crude oil and direct diesel imports.
 - Better fuel security as a result of domestic RDF production and freedom from having fuel price dictated by the international crude oil price.
 - The ability to have domestic RDF costs independent of the USD/NZD conversion rate.
 - A change from a GHG emitting (carbon positive) fuel to a fuel that is carbon negative.
 - The ability to have a diesel price going into the future that is fixed, being indexed only to NZ inflation.
 - Enhanced regional development by having RDF production plants (18 million litres per plant) established near to where the feedstock is produced and where the diesel will be used.
 - Stimulation of the NZ forest industry by providing an alternative outlet for forest industry processing residues and low quality logs, particularly where there is currently no market for such low quality logs.

- Boosting of NZ agriculture by providing an alternative and reliably-priced crop - Miscanthus (see below) - that can be grown specifically to be a feedstock for the production of RDF – complementing the use of forest industry processing residues.

Miscanthus

4. GPI also has access through an associate company Miscanthus New Zealand Limited (MNZ) to a new crop called Miscanthus which is beginning to be grown throughout NZ for a wide variety of uses. The NZ Miscanthus industry is developing particularly quickly now and in addition to a list of practical agricultural uses, Miscanthus can also provide benefits to New Zealand by being directly substituted for fossil fuels such as coal.
5. Fonterra already appreciates this possibility and is working with MNZ to test the suitability of Miscanthus for use in their existing boiler systems to replace some of the coal that is currently burned. Miscanthus is widely used for this purpose internationally.
6. Other boiler operators are also showing interest and with most industries, there are potential commercial synergies as well as being clear environmental and GHG benefits.
7. Miscanthus is a deep-rooted perennial and helps to stabilise the soil. At the same time, its production is boosted by rainfall or application of irrigation.
8. Miscanthus also has a unique ability to pick up nutrients from the soil profile and prevent them from being leached. International research has shown this to be the case and research by Fonterra in Canterbury has confirmed this. Fonterra's research has shown that even with nitrogen-rich dairy factory effluent being spray irrigated onto a Miscanthus stand, the amount of nitrogen leaching to the water table is less than 5% of the amount of nitrogen leaching from pine forest that is receiving only rainfall.
9. Miscanthus is a crop that could be established on land adjoining industries that have nutrient rich effluent disposal issues and that also require heat from boilers. If Miscanthus were established adjoining such an industrial plant, it would provide a safe effluent disposal site while growing a product that is GHG/environmentally friendly and that could be a GHG neutral fuel for the industry's boiler.
10. The same could be applied to use of Miscanthus for land-based local body sewage disposal systems and a proposal for exactly this has already been put to the Tararua District Council for consideration. The outcome of this sort of approach will be environmentally safe cost-effective land-based disposal of sewage effluent, which would result in production of a GHG neutral fuel for industry while improving the quality of waterways.

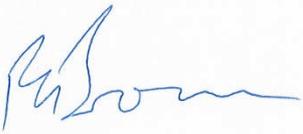
Biochar and stock

11. A small amount of research by some internationally respected Australian scientists has suggested that addition of small amounts of biochar to stock feed has the ability to enhance growth of cattle by 25% while at the same time reducing methane emissions by 22%.
12. Work is being done in several parts of the world to evaluate this and GPI has a proposal from a large NZ veterinary business to carry out a formal and significant sized trial as soon as GPI can get access to the requisite quantity of biochar - essentially a container load.

13. If either of those values was even half what has been published, the results for NZ would be quite significant. An increase in cattle growth can be measured in dollars by simply calculating the value of the extra weight gain. At the same time, a decrease in methane production by such stock can also be directly valued as long as the benefits can be included within the NZ Emissions Trading Scheme.

It seems clear to us that the multiple benefits that will arise from stimulating a NZ Miscanthus industry, allied to starting and expanding the production of renewable diesel, go considerably beyond anything that has been considered by officialdom to date. This is because officialdom is in general completely ignorant of these possibilities.

A key staff member representing GPI and/or MNZ would be happy to meet with the commission to provide more information and evidence.



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29 September 2017