

Geoff Ward,

## **The role of grain ethanol as an alternative fuel to petroleum in Australia.**

### **Summary.**

I present this submission from the position of a concerned citizen representing no organization. I have a BAg.Sc. degree with practical experience in the grain industry. I have read much of the literature and closely follow the world grain prices.

I think common sense and humanitarian concern should lead you to accept that grain ethanol has no role as an alternative fuel for petroleum in Australia as the humanitarian, economic, social and environmental costs are too great.

At this point I would like to clarify a common misconception in this debate. Some believe that the grain used in a grain ethanol plant is 'just feed grain' and as such they imply that this grain can be seen as a different resource to other grain and so acceptable to convert to ethanol. This implication is nonsense.

Firstly, feed quality grain and food quality grain are products from the same resource, grain, produced from the same acres, using the same inputs. The products themselves cannot be seen as separate resources as the production of one takes away from the other, their production is interchangeable. The impact on the human food chain is the same whether we use 'just feed grain' or food grade grain to produce ethanol as both stem from the same grain production resource.

Secondly, 'just feed grain' to produce a food, beef, chicken, eggs, dairy products. After allowing for the distiller's grain by-product, seventy percent of the 'just feed grain' a grain ethanol plant will use ends up as ethanol, not food. As the World Bank attributes 75 percent of the rise in world food prices to biofuels it is obvious that this operation impacts on our domestic food supply and associated humanitarian issues in the developing world.

### **An expanded grain ethanol industry in Australia**

- cannot play a significant and secure role due to feedstock limitations; See (1) below.
- will impact the production of food in Australia in a drying Murray Darling Basin and so also food price inflation; See (1) below.
- will impact global grain trade and prices and so also the poorest in the world; See (2) below.

- may not fulfill the benefits claimed in support of a grain ethanol industry; See (3) below.
- could be rapidly superseded by second generation biodiesel and will hinder the development of preferred non food competing biofuels; See (4) below.
- will remain a heavily subsidized, protected industry; See (5) below.

The Federal Government's continuing excise rebate, capital grants and import protection for grain ethanol are facilitating two State Governments in their push to mandate ethanol. In NSW these mandates will be filled by grain ethanol, in Queensland partly so.

The reasons why we should not develop a grain ethanol industry in Australia far out-weigh the reasons why we should. With scientific research and global experience this balance has swung strongly against grain ethanol throughout the course of this year.

This Senate Hearing should recommend that the Federal Government immediately make a distinction between ethanols based on their feedstock and withdraw any support for grain ethanol in Australia. This action will pressure any State Government to rethink their policies on mandating grain ethanol.

### **Discussion.**

(1) Grain feedstock and food production.

To date Australia has not seriously embraced grain ethanol and current ethanol feedstocks of sugar cane by-products and waste starch from gluten production in the main do not impact on food production

However this seems set to change. The Federal Government has in place policies to encourage the further development of an ethanol industry. Several State Governments, in particular NSW, are actively taking advantage of these policies. They are supporting investment by implementing and proposing mandates that will lead to the use of grain feedstocks for ethanol.

Queensland can partly fill their proposed 5 percent ethanol mandate from sugar cane but the grain ethanol plant near completion at Dalby will use about 220000 tonnes of grain annually.

Without access to much sugar cane and with very limited potential to source additional waste starch the proposed E10 mandate in NSW will have to be filled from grain feedstock and will impact on food production.

Misinformation on this fact is rife. There is no waste starch from flour milling as has been suggested from various sources and off grade grain has always been used in the livestock industry to produce food. Grain such as soft wheat grown specifically for ethanol production will be grown on acres taken from food production and the manufacture of distiller's grain cannot be redefined as producing waste starch for ethanol as claimed in the NSW Parliament.

The quantity on grain needed to fill the proposed NSW ethanol mandate must be assessed when considering the effect of an E10 on food production in NSW. This is not as simple as dividing the 550 million litres of unleaded petrol used in NSW by 370, the litres of ethanol produced per tonne of grain.

- Ethanol has only 68 percent of the energy of petrol.
- A quantity of ethanol is already produced from 'true' waste starch from gluten production.
- Distiller's grain will revert back to food production when fed to livestock. Whether this byproduct can be fully deducted from the impact of grain ethanol on world food production is debatable. To avoid energy use in drying, distiller's grain will have to be fed wet to livestock nearby the ethanol plant. This may necessitate the establishment of additional intensive livestock industries. As distiller's grain can only be fed up to 20-30 percent of rations, the remaining 70-80 percent will have to be sourced from acres in further competition with existing grain production and so impacting the volume of tradable grain on the world markets.

My estimate of the net grain needed as feedstock to fill an E10 mandate in NSW could be about 1.2 million tonnes annually.

It would have been difficult to meet this mandated demand for grain in three of the last six years in NSW. If the ethanol mandate had been in place existing grain end-users would have been affected to a greater extent and food price inflation more pronounced.

In a drying Murray Darling Basin with an increasingly variable climate, water buybacks and environmental demands these import parity pricing situations are likely to occur with greater frequency even without a grain ethanol industry.

With the mandated use of 1.2 million tonnes of grain in NSW, serious impacts on existing food production systems and inflation can be expected.

This insecurity of grain supplies means that a reason for a grain ethanol industry, the security of supply of transport fuels, is compromised.

(2) The food for fuel debate.

The effects of the conversion of grain to biofuels around the world on global food supply and price is well documented. Public opinion, academia, media and NGO's are leading the push to question the costs and benefits of grain biofuels in the so called food for fuel debate.

The realisation that the subsidisation and the encouragement by mandates and targets for grain biofuels may have been ill conceived is leading the EU to revisit this policy and the Republican Party to oppose the ethanol mandate in the USA.

Political parties and the environmental movement, as instigators of these policies, are slower to accept the reality that they may have been wrong. Ethanol advocates with vested interests are doing their best to muddy the waters and have the ear of many policy makers.

(3) Points put forward by advocates of grain ethanol include

- cleaner air with ethanol blends.—the CSIRO recently reported that ethanol blends would have only marginal health cost savings, diminishing over time as the car fleet is upgraded.
- a reduction of greenhouse gasses—this has been shown as minimal by whole cycle studies and far less than sugar cane ethanol.
- an increase in jobs and investment in regional and rural areas—these have been shown to be heavily subsidised jobs and investment with no allowance for jobs and investment lost by existing food producing industries impacted by mandated grain use.
- a renewable energy source—only partly so as significant fossil fuels are used in production of grain ethanol.
- utilizing waste starch—a limited feedstock as point covered previously.
- Higher domestic grain prices—this will only come about when the mandated or subsidised grain use leads to import parity situations. Then the higher prices will be paid for by loss of profitability of other exporting or import competing grain end users and by higher domestic food prices. In years of export surplus and export parity pricing grain ethanol plants will pay no more for their grain than what our farmers could get on the export market.
- the establishment of an ethanol distribution infrastructure in preparation for second generation ethanol—see (4) re second generation biodiesel. If an ethanol infrastructure is seen to be advisable then we can import cheaper sugar cane ethanol. See (5) below.

In my opinion, when placed beside the reasons against the conversion of grain to ethanol these reasons for pale into insignificance. The only significant reason for a grain ethanol industry is deliberately not promoted by the advocates, that of investors profiting from government subsidies, mandates and capital grants.

(4) There are some basic problems with a grain ethanol industry.

- The economics and greenhouse gas abatement of a grain ethanol plant are improved if the distiller's grain protein by-product can be used wet in livestock rations. Because of this a grain ethanol plant will be associated with an intensive livestock operation nearby. Cellulose ethanol does not have this protein byproduct and so a change to the preferred cellulose ethanol will compromise the economics and CO2 abatement of the grain ethanol/livestock complex. Bear in mind also that these grain ethanol plants may not be sited favorably to use cellulose feedstock (see below).
- An ethanol industry and infrastructure may not be in the future alternate fuel mix. With reports that work is progressing rapidly on modified E.Coli bacteria that excrete oil and algal biodiesel, ethanol may be eclipsed by biodiesel. For Governments to back a grain ethanol industry with taxpayer's money in a rapidly evolving biofuel scene is

irresponsible. Surely it is best to skip this first generation grain biofuel phase which really has very limited potential.

- A grain ethanol industry will not encourage R&D of cellulose ethanol. An established grain ethanol industry will be a hindrance to the development of the preferred cellulose ethanol. It will have no incentive to change to cellulose and in fact, if sited in the wrong location and faced with possible cheaper ethanol production they would actively campaign against it. Politicians, faced with compensation for encouraging the grain ethanol industry, will likewise have little incentive to get behind a cellulose ethanol industry. Put another way, cellulose ethanol feedstock will probably be sourced between the tropics where there is greater photosynthetic activity. The grain ethanol industry now developing in temperate areas will not be advocates of this competition. This will be a very unfortunate as cellulose ethanol, if successfully developed, could be the real replacement for transport fossil fuel we are all hoping for. Australia is fortunate in having millions of acres undeveloped in our tropics which would be ideal for large scale cellulose ethanol production to supply both domestic and export markets.

(5) Grain ethanol will remain a heavily subsidized and protected industry.

The grain biofuel industry has the cost of its feedstock determined by world grain prices and the price of its biofuel determined by the price of oil. Under the current cost/price ratio, the world grain biofuel industry needs government subsidies, mandates and import protection to survive.

World grain prices now tied to the price of oil, firstly through costs of oil dependant inputs of grain production and secondly because the price the grain biofuel industry can pay for feedstock impacts world grain prices. This biofuel feedstock price and therefore the world grain price vary with the oil price. This means that the current grain biofuel cost/price ratio will maintain its relative value into the future. As a result a grain ethanol industry must always continue to rely on taxpayer handouts. In the face of the more economical production of ethanol from sugar cane which could be traded internationally why would you encourage the establishment of grain ethanol industry?

In addition

- Protectionist policies belong in our past. It is hypocritical for farmers to demand and governments to implement protectionist policies with respect to grain ethanol when for years we have fought tariffs and USA/EU farm subsidies. As an exporting nation, Australia must support global trade and benefit from comparative advantages between trading partners.
- The excise rebate is a transfer of wealth from taxpayers to ethanol investors and grain growers in times of shortage at the rate of 57.215

cents per litre of petrol replaced (allowing for the relative energy contents). The rest of the population will object to this transfer of wealth when it is pointed out that the NSW E10 involves a \$230 million annual subsidy of Federal money to NSW. The Productivity Commission recently questioned the value of this excise rebate. The annual \$230 million excise rebate could be better spent on research and encouragement of second generation biofuels.

- Importing ethanol makes more sense than subsidising domestic grain ethanol. Currently Brazilian ethanol futures are priced at about A\$0.30 / litre delivered Paulinia, San Paulo or A\$0.42/ litre FOB. Grain ethanol cannot compete with sugar cane ethanol economically or environmentally if CO2 abatement is taken into account.