

Energy Green Paper Submissions,
Energy Planning Division,
Dept. of Comm., Marine and Nat. Resources,
Adelaide Road,
Dublin2

Quinns of Baltinglass
Main Street,
Baltinglass
Co. Wicklow

3rd November 2006

Dear Sir,

Quinns of Baltinglass and our colleagues JHM Crops in Limerick are the promoters in Ireland of Miscanthus commonly known as Elephant Grass. We believe it is a viable Energy Crop for Irish conditions. It is very suited to our mild wet climate as evidenced by the 1,000 acres we have planted in the last 2 years in 16 different counties. We are convinced that it can make a valuable contribution to our energy needs as outlined in your Green Paper.

Having read your Green Paper on Energy, we in Quinns wish to accept your invitation for comments as an interested party. We would firstly like to outline some of the features of Miscanthus:

- Miscanthus is a woody perennial grass originating in Asia.
- Extremely fast growing, reaching heights of over 3 metres in a season.
- Requires no pesticides, herbicides or fertilizer once established.
- Capable of a positive energy efficiency of 32:1 (For every unit of energy input, 32 units of energy is produced)
- Suited to a wide variety of Irish soil types.
- Can be harvested using conventional farm equipment.
- Produces harvestable cane at low moisture levels (circa 20%) thereby making combustion more efficient.
- Can produce 20 tonnes of cane per hectare per annum for over 20 years once it reaches maturity.
- Harvested cane can be shredded or baled and combusted in shredded, baled or pellet form.
- Has same energy value as wood at circa 17Mj per kg.
- Emissions from combusted miscanthus are free from pollutants as no chemicals are used growing the crop.

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Under **Section 3.2.6** in your questions for consultation the question is asked:

“what measures could be taken to encourage the exploration and production of indigenous energy resources?”

Miscanthus is capable of producing high yields of energy on a variety of Irish soils. In order to encourage the growing of miscanthus as an energy crop the following measures are required in order to encourage its production:

1. An Establishment Grant in order to defray the establishment costs of €2,500 per hectare. This grant could be conditional on an energy end use contract being in place. The Energy Crops Scheme (ECS) in the UK has been very successful in increasing the plantings of miscanthus by grant aiding 50% of its cost of establishment.
2. Acceptance of miscanthus for payments under REPS (Rural Environmental Protection Scheme). Presently, miscanthus is not allowed under REPS and this is a serious disincentive to many growers in opting to grow miscanthus.
3. An increase in the energy crop supplement beyond the current €45 per hectare per year on non-setaside land. Currently, this grant is too low to have any material effect on planting decisions and should be substantially increased.
4. Currently VAT at 13.5% is charged on miscanthus rhizomes as miscanthus cane goes for a non food end use. A zero Vat rating for energy crop planting material would further encourage plantings.

Under **Section 3.2.9**. the question is asked:

“what can be done to improve the pace and range of development of renewable energy resources for electricity generation on a sustainable basis?”

Currently peat is used as a feedstock in some electricity generating stations. Miscanthus in shredded form can be co-fired successfully with peat. Edenderry Power for example has expressed a desire to operate a commercial trial to co-fire peat with miscanthus cane. An added benefit is that Miscanthus cane produces only 2% ash.

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By co-firing miscanthus, and thus reducing the extraction of peat, one is increasing the life of the peat bogs and thus maintaining a feedstock supply for a longer period. As these peat burning stations are modern and capable of outlasting the supply of available peat, this can be a very cost effective measure.

In order to implement a co-firing project, miscanthus cane producers must be paid a competitive price for their product. Under their existing off take agreements with Bord Na Mona, Edenderry Power pay the equivalent of €3.50 per GJ of energy. This price is extremely competitive as the essence of this contract initially was to secure a market for peat and maintain employment on the bogs. It would not be economically viable to grow, transport and pre-prepare miscanthus for this price.

However, taking account of the positive environmental aspects of miscanthus and putting a monetary value on these could produce a mechanism to make a bio-energy crop such as miscanthus a viable option.

Under the National Allocation Plan (NAP), electricity generators have a carbon emission allocation. If this is not used, the excess can be sold under the emissions trading regime. If the allocation is exceeded, carbon allowances have to be purchased. The purchase cost of these allowances can be recouped by the power generator by way of the PSO levy through the Energy Regulator. In other words the cost is merely passed on to the consumer.

There is thus no incentive for the power generator to substitute renewable energies such as miscanthus. The cost of carbon purchased is passed directly to the electricity consumer via the PSO levy and those brokering carbon credits internationally are the beneficiaries under the present arrangement.

A mechanism must be formulated to pass any carbon emissions savings by way of the use of biomass instead of peat or other fossil fuels back to the growers. This can be done as follows:

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1 tonne miscanthus cane @20% moisture ~16 GJ energy

2 tonnes peat@55% moisture ~16 GJ energy

1 tonne of miscanthus can therefore replace 2 tonnes of peat.

1 tonne of peat contains 0.234 tonnes Carbon. On combustion this gives rise to 0.856 tonnes of CO₂.

For every 2 tonnes of peat substituted by a tonne of miscanthus therefore prevents 1.712 tonnes of fossil derived CO₂ emissions.

By a power station co-firing miscanthus and peat, there is a carbon benefit which is measurable and in turn an monetary asset in addition to its energy value. Presently there is no incentive to reward the feedstock producer and this must be altered in order to encourage co-firing of biomass.

Substituting miscanthus with peat also reduces the rate at which our peat bogs are being diminished thus maintaining this indigenous source of energy for longer. It also maintains a supply of feedstock giving the peat burning power stations added longevity.

Under **Section 3.2.10** the question is posed

“In addition to electricity generation, what actions should be taken to develop renewable energy use in the transport and heat sectors”

There are new technologies being developed in order to produce ethanol and other transport fuels from ligno-cellulose feedstocks. Presently, however, Miscanthus can be used in heating systems in baled, shredded and pelleted form.

It is our intention to build a pelleting plant to produce miscanthus based wood pellets. These will be combustible in domestic, institutional, hotel/leisure and industrial pellet boilers. The boiler

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grant scheme currently in operation will help to create a demand for these pellets in the domestic situation.

It is essential to have a supply of pellet feedstock which comes from energy crops as it is not sustainable to develop this sector based on a by-product of the forestry sector only. Those presently installing or considering the installation of pellet boilers are greatly encouraged by an alternative feedstock such as miscanthus being available as the demand for pellets increases.

This further emphasizes the need to support the move into miscanthus by way of the establishment grant in particular.

Under **Section 3.2.15** the question is posed:

“Do we need to choose between mandatory targets and better incentives for renewable energy and energy efficiency – or is a mix of both the best way forward?”

It is our opinion that a mix of the two is the best way forward. The mandatory targets will be set by way of EU Directives as it has been over the last few years. The most important aspect is to give better incentives.

From our dealings with potential growers of miscanthus and other energy crops, we believe they will respond given the incentives outlined earlier in this submission. We have no doubt that a substantial acreage of miscanthus will be planted if Establishment Grants and supplementary energy payments are announced.

For example:

1,000 hectares planted in miscanthus can produce 350,000 tonnes of cane over 20 years substituting 700,000 tonnes of peat.

Or

In pellet form the 350,000 tonnes of cane can replace 157.5 million litres of heating oil in our heating systems.

A 50% Establishment Grant for 1,000 hectares miscanthus would cost circa €1.3 million in total or €0.008 per litre heating oil equivalent.

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Additional Environmental Benefits

Quite apart from the environmental benefits of replacing fossil fuels with renewable energies, miscanthus also has the ability to sequestrate (lock up) carbon in its below ground rhizomes and root system. A 4 year old crop of miscanthus can have 15-20 tonnes of below ground organs containing 7.2-9.6 tonnes of carbon per hectare.

As there is no annual cultivation, this carbon builds up in the ground each year thus letting miscanthus act as an effective carbon sink.

Conclusion

Recently, there has been much media coverage of Governmental support for the renewable energy sector and of likely supports for energy crops in the form of Establishment Grant Aid. Failure to have such Grant Aid in place for the forthcoming (2007) planting season would result in no energy crops being planted as naturally farmers will await this imminent grant. It is therefore essential to have a scheme in place for the forthcoming season to maintain the valuable momentum built up in this sector.

Such Governmental support at this stage would in our view be self financing by way of security of energy supply, import substitution, reduced GHG emissions and subsequent reduction in national carbon penalties.

Should you wish to receive any additional information on Miscanthus or have any of the points made above clarified please contact:

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