

STATEMENT n° 2005 - 1:

**HOW TO REALLY PROMOTE
PURE PLANT OIL BIOFUEL ?**

**Contribution to Viewls project
and to European Commission action**

From :

European Pure Plant Oil Association

Maison Départementale de l'Agriculture

271, rue de Péchabout

47000 AGEN - FRANCE

info@eppoa.org

www.eppoa.org

To M. José Manuel Durão BARROSO

Président of European Commission

B – 1049 Brussels Belgium

sg-web-president@cec.eu.int

with copy to VIEWLS Project

project co-ordinator: viewls@sentermovem.nl

Whereas european laws have adopted :

- * the DIRECTIVE 2003/30/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport,
- * the DIRECTIVE 2003/96/EC OF THE COUNCIL of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity,
- * European Parliament legislative resolution on the draft Council directive restructuring the Community framework for the taxation of energy products and electricity (8084/2003 - C5-0192/2003 - 1997/0111(CNS)) (P5_TA(2003)0404 - A5-0302/2003)
- * the COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT AND THE ECONOMIC AND SOCIAL COMMITTEE COM(2001) 260 final on 23/05/2001: Tax policy in the European Union -Priorities for the years ahead,

Whereas considering the genuine advantages of the qualities of Pure Plant Oil as biofuel (Pure Plant Oil used as motor fuel is harmless, contributing to a better environment, less dependency on mineral oil creating employment and offering perspectives for the agricultural sector),

Whereas considering that Pure Plant Oil is not only rapeseed oil but also sunflowerseed oil, and PPO norm must include sunflower parameters,

Therefore we address to you the following statement in order to really promote Pure Plant Oil used as biofuel :

1st part (p 3 to 7) :

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| <ul style="list-style-type: none">1- What is Pure Plant Oil (PPO) liquid biofuel?2- Pure Plant Oil (PPO) is the best liquid biofuel today3- Why is there a lack of studies on Pure Plant Oil (PPO)?4- What would be happen if developments were left to the market?5- If EC really want to promote Pure Plant Oil biofuel...6- An example of freedom in energy products |
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2nd part (p 8 to 11) :

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| <ul style="list-style-type: none">* Examination of Renewable Transportation Fuel Developments and Future Prospects* Examination of Pure Plant Oil as a Transportation Biofuel – Experiences and Potentials |
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3rd part (p 12) :

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| <ul style="list-style-type: none">* Proposal of sunflower PPO norm |
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If you require any further information, please do not hesitate to contact us. Yours sincerely,

for the European Pure Plant Oil Association,

Theo Maessen,

Cythemadim bv – Nederlands

theo.maessen@cythemadim.nl

1- What is Pure Plant Oil (PPO) liquid biofuel?

A) BASICS for DECENTRALISED PLANT OIL PRODUCTION and PLANT OIL TECHNOLOGY

Large energy savings are possible with decentralised production and use of Pure Plant Oil as an energy carrier. This is achievable by establishing small and medium sized cold press oil mills in rural regions.

This model can be observed in Germany where more than 100 small and medium sized oil mills are operating on this basis, the success of which can be gauged by the growing number of oil mills.

As an illustration the oil mill project in Aachen, Germany uses a rapeseed feedstock and achieves:

- ?? Annual substitution of up to 2.36 million litres diesel fuel and heating fuel by Pure Plant Oil.
- ?? Annual reduction of up to 5.149 tons CO₂ emissions in the region.
- ?? Annual replacement of up to 4.720 tons of imported Soybean fodder, produced as a co-product when cold-pressing seed.
- ?? Annual reduction of 29.5 million ton/kilometres transport in the region.
- ?? A stronger engagement of farmers in regional energy supply leading to possibilities of participation in the energy sector.
- ?? Implementation of a structure supporting the rural economy i.e. job security and the creation of new jobs in the renewable energy sector.

B) THE DECENTRALISED CONCEPT

Currently a farmer generally travels about 25 kilometres to transport his harvest from the fields to his client (cooperative, warehouse, storage facilities,...).

In the decentralised model, situated in a rural region, the farmer takes his oilseed harvest to the local oil mill.

All necessary steps for the seed like drying, cleaning, coldpressing and storage take place at the oil mill.

The farmers are avoiding additional transport costs to and from the few big industrial oilmills, as is common with the centralised system of plant oil production.

CO₂ balance benefits are already evident at this point.

With cold pressing two products emerge:

- ?? Pure Plant Oil
- ?? Press Cake

The oil is suitable as fuel, for diesel engines or heating systems, and technical oil.

The rich protein cake is suitable for livestock feed replacing soybean cake.

This production stands to reduce imports of both soybean cake and fossil fuels with a locally produced product; both economically and in CO₂ terms the advantages are significant.

By Illustration:

- ?? One hectare of land sown with rapeseed and cultivated using non-intensive fertilisation generates 3 tons of straw and a rapeseed harvest of about 3.000 kilograms per year which with cold-pressing of the seed yields 1.100 litres of rapeseed oil and 2.000 kgs rapeseed press cake.
- ?? A dairy cow needs per day about 2.5 kilograms and a pig about 0.2 kilograms of rapeseed cake.
- ?? With a fuel economy of 8 litres of fuel per 100 Km., 1 hectare provides enough fuel to travel 14000 km.

C) Oil production in decentralised oil mills – Cold pressing method

Decentralised oil mills are environmentally friendly, economical and can be less labour intensive.

An oil mill can be brought on line with an investment which would be acceptable to groups of farmers or other private small to medium investors.

Savings are gained with comparison to large oil mills, which use hot press and solvent extraction, in the areas of oilseed preparation, oil processing and oil treatment.

Oil production by cold-pressing is only limited to 3 processing stages.

- ?? Pre-treatment of the oilseeds. This is necessary for a uniform oil quality and the protection of the presses. Thorough cleaning of the seeds is undertaken removing all foreign objects (dust, stones, metal..). The seed is then carefully dried to provide stability of the seed in storage. This is important to ensure a high yield of oil with a stable quality.
- ?? Oil Production. The oil is mechanically extracted from the seed using a screw press. The press cake by-product can be stored or immediately used as cattle fodder.
- ?? Oil cleaning. The oil contains 1-12 % of particle contamination as it leaves the press. Cleaning can be achieved using sedimentation, filtration or centrifugation with a final security filtering process to ensure low particle contamination.

2- Pure Plant Oil (PPO) is the best liquid biofuel today

PPO used as fuel has the following characteristics:

- * non-toxic: no risk of inhaling toxic or carcinogenic gases, no risk of water pollution, no risk on skin contact.
- * emissions are reduced with the use of PPO as fuel, it contributes towards an 'ideal of less pollution', a state that mineral-oils will never reach (cf. point 5.4 Directive proposal of the European Parliament and of the Council 2001/265 (COD) part of 2001(COM)547).
- * **no sulphur emissions** : there is no risk of acid rain, and soot discharges are considerably reduced.
- * PPO is **biodegradable**, **non-flammable** and does **not evaporate** (there is no energy "vanishing into thin air" as is the case with mineral-oil).
- * the 'Note de synthèse' of the report : « Bilans énergétiques et gaz à effet de serre des filières de production de biocarburants en France » (Ecobilan - PricewaterhouseCoopers pour ADEME/DIREM - Septembre 2002) states that PPO (as a neutral CO₂ fuel) gives :
 - ??the **best energetic balance** (ratio PPO to Diesel = 6 : 1),
 - ??the **best greenhouse gas balance** (ratio PPO to Diesel = 1 : 7) ;

Note de synthèse du rapport : « **Bilans énergétiques et gaz à effet de serre des filières de production de biocarburants en France** »
ADEME/DIREM Ecobilan - PricewaterhouseCoopers - Septembre 2002

Bilans énergétiques

	<i>Essence</i>	Ethanol Blé	Ethanol Betterave	MTBE	ETBE Blé	ETBE Betterave	<i>Gazole</i>	Huile Colza	Huile Tournesol	EMHV Colza	EMHV Tournesol
Energie restituée / Energie non renouvelable mobilisée	0.873	2.05	2.05	0.760	1.02	1.02	0.917	4.68	5.48	2.99	3.16

Bilans gaz à effet de serre avec hypothèse de combustion totale

	<i>Essence</i>	Ethanol Blé	Ethanol Betterave	MTBE	ETBE Blé	ETBE Betterave	<i>Gazole</i>	Huile Colza	Huile Tournesol	EMHV Colza	EMHV Tournesol
Indicateur effet de serre par kg (g eq. CO₂/kg)	3 650	922	902	3 130	2 530	2 522	3 390	660	498	888	745

Other studies show greater gains when utilising non-chemically intensive agricultural methods.

3- Why is there a lack of studies on Pure Plant Oil (PPO)?

Engine builders work in partnership with the petroleum industry when considering fuels for vehicles. The petroleum industry only gives consideration to biofuels which match the current fuel supply model of large scale production with which they are familiar and to which they would be liable to a large market entry.

The cold pressed PPO model fits best with oil produced by localised rural seed growers.

Car manufacturers have adapted engines to run on biofuels only in partnership with the petroleum industry which has money to pay research (e.g. In France PSA Hdi engines perfected by “Institut Français du Pétrole”).

There is no money available for research into PPO effects in new engines.

4- What would be happen if developments were left to the market?

Because of lack of money in the PPO field and in turn a lack of studies on PPO as a biofuel, it appears that many member states may reject PPO as biofuel (France is a leader, forbidding PPO since 1998 even following the passing of directive 2003/30EC).

Apparently, left to market forces, we cannot expect a European future for PPO as a biofuel.

Yet the DIRECTIVE 2003/30/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport stipulates:

- * article 3 point 4 : « **consider the overall climate and environmental balance of the various types of biofuels and other renewable fuels** » and « **give priority to the promotion of those fuels showing a very good cost-effective environmental balance** » ;
- * Recital (19) : « a package of measures, including **tax exemption** » ;

Yet the DIRECTIVE 2003/96/EC OF THE COUNCIL of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport stipulates:

- * Recital (14) The **minimum levels of taxation** should reflect the competitive position of the different energy products and electricity. It would be advisable in this connection **to base the**

calculation of these minimum levels as far as possible **on the energy content of the products**. However, this method should not be applied to motor fuels; (why????)

- * Article 16 « Biofuels and other products produced from biomass » point 1 : Member States may, without prejudice to paragraph 5, **apply an exemption** or a reduced rate of taxation under fiscal control on the taxable products referred to in Article 2 where such products are made up of, or contain, one or more of the following products: - **products falling within CN codes 1507 to 1518;**

These directives point towards PPO. There are good short to mid term prospects for PPO which would be greatly improved if PPO vehicles were available. This could become a reality with an obligation on car manufacturers as has been shown in the USA with flexi-fuel vehicles which are now widely in use. Unfortunately the owners of these vehicles are often unaware of the potential to run ethanol fuel in them and the fuel is not readily available.

5- If EC really want to promote Pure Plant Oil biofuel..

A) DUTY FROM FOSSIL FUELS HAS TO PAY RESEARCH in PPO FIELD

In the EC “Energy Green Paper” are provisions to allow a small part of excise-duty to be made available to car manufacturers in order to assess, with all cars, what proportion of PPO can be used in compliance with pollution standards.

But it’s not sufficient to write “member states may...” it must be an obligation in all member states.

B) PPO MUST BENEFIT FROM DIRECT and FULL EXEMPTION of EXCISE DUTY

Without duty exemption economic and administrative hindrances would heavily burden the development of PPO biofuel.

The DIRECTIVE 2003/96/EC OF THE COUNCIL; 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport stipulates:

- * Title I. Scope - Article 3 Links with Directive 92/12/EEC : References in Directive 92/12/EEC to « mineral oils » and « excise duty », in so far as it applies to mineral oils, shall be interpreted as covering all energy products, electricity and national indirect taxes referred to respectively in Articles 2 and 4 (2) of this Directive.

And the COUNCIL DIRECTIVE 92/12/EEC of 25 February 1992 on the general arrangements for products subject to excise duty and on the holding, movement and monitoring of such products stipulates:

- * whereas (3) the **concept of products subject to excise duty should be defined;** whereas **only goods which are treated as such in all the Member States may be the subject of Community provisions...**
- * TITLE I General Provisions - Article 1 point 1 : This Directive lays down the arrangements for **products subject to excise duties** and other indirect taxes which are levied directly or indirectly on the consumption of **such products**, except for value added tax and taxes established by the Community.

* Article 3 point 1 : This **Directive** shall **apply** at Community level **to the following products as defined in the relevant Directives: mineral oils**, alcohol and alcoholic beverages, manufactured tobacco.

* Article 4 : For the purpose of this Directive, the following definitions shall apply:

- a) **authorized warehousekeeper**: a natural or **legal person authorized** by the competent authorities of a Member State **to produce**, process, hold, receive and dispatch **products subject to excise duty** in the course of his business, excise duty being suspended under taxwarehousing arrangement;
- b) **tax warehouse**: a **place where goods subject to excise duty are produced**, processed, held, received or dispatched under duty suspension arrangements by an authorized warehouse keeper in the course of his business, subject to certain conditions laid down by the competent authorities of the Member State where the tax warehouse is located;

* see also : Article 5 point 1, Article 9 points 2 and 3 (« **the nature of the products** »...)

Also “virgin” (prime cold-pressed) Pure Plant Oil is different from commonly available oil only by processing and the conditions of production. As food oil, or other plant oils could *potentially* be used as motor fuel the authorities of a Member State should implement directive 92/12/EEC to an oil-mill which would so become a “tax warehouse” and to an oil-producer who would so become an “authorized warehouse keeper”. Thus, directive 92/12/EEC could be implemented on any oil-mill, leaving the authorities of a Member State to judge case by case.

So PPO must be excluded from the scope of directive 2003/96EC as European Parliament decided in its Resolution 8084/2003 - C5-0192/2003 - 1997/0111(CNS) 24 september 2003.

If, as would appear desirable, we want to control (and avoid) large scale industrial production of PPO, we have to limit exclusion from the scope of directive 2003/96/EC to PPO produced in small-scale units.

But it's not sufficient to write “member states may...” it must be an obligation in all member states.

6- An example of freedom in energy products

Fire wood is of course an energy product. Yet it is not included in the list of energy products in directive 2003/96/EC. So there is no reason why it could not be the same for small-scale produced PPO.

Wood and PPO are, in a way, similar products; anybody can take simple tools (chain saw / press) and with a little work get the end product (firewood / oil) which can be used as an energy source. No chemical products are used, there is no toxic hazard, only a process as old as man, brought up to date with modern simple tools.

Why restrict PPO through taxation when nobody can seriously imagine taxing fire wood?

Why not let PPO be as free as wood?

Blooming Futures Ltd.
Steyning
West Sussex
Tel: 01273 462197

www.vegburner.co.uk

Examination of Renewable Transportation Fuel Developments and Future Prospects

The adoption of renewable transportation fuels has been recognised as an important mechanism in the reduction of carbon and related emissions. The current increase in use spurred by the work of the European Union has great potential to not only help address carbon emissions but could have great benefits in a number of other areas including, fuel supply sustainability/security and rural development.

The UK is some way behind the leading European member states in the uptake of biofuels. Examination of these other countries and the course taken in achieving their position provides valuable real life examples of how biofuel uptake can be encouraged and what the outcome of these measures may be.

The number of different potential biofuel solutions, and the likely effects adoption of any given mechanisms to promote the use of these fuels, gives a huge area of conjecture and speculation upon which numerous studies have concentrated. The number of variables is huge, making a comprehensive understanding of the outcomes of any course of action somewhat unachievable. Through out Europe and further, numerous studies have been undertaken to assess these issues; unfortunately, despite the great amount of work on these subjects, the implications are still somewhat unclear. The examination of one type of biofuel can lead to completely different conclusions by the change or oversight of one small variable.

This lack of clarity would suggest that the adoption of a mechanism that encouraged the use and therefore development of only certain biofuels would close the door on other options which would offer greater benefits. At the same time there is a need to address fuel quality and compatibility issues.

The uptake of biofuels has been largely market led which, although cost effective from a governmental budget perspective, the focus of the market is financial and there has been no impetus to address other important issues connected with uptake. This has been shown by the importation of palm oils for UK biodiesel production, given the negative aspects of encouraging oil palm plantation expansion and long distance transportation of commodities. Of great importance is a need to implement mechanisms that will encourage development of the use of fuels that offer the greatest benefits when the entire consequences of the fuels usage is examined, crafting working mechanisms to promote this would appear to be a large undertaking. For this reason it would appear prudent to progress in a manner that will spur both further development of biofuels, to allow further assessments to be made, and to encourage increased biofuel production to satisfy the EU requirements.

Current biofuel developments have been slowed by the disjointed governmental position. A number of different agencies and departments have powers in their remit that have a great influence on biofuel uptake potential. Mixed messages have resulted in confusion amongst developers and users that has hampered growth. A more united cross departmental position would obviously aid progress.

Examination of Pure Plant Oil as a Transportation Biofuel – Experiences and Potentials

Pure plant oils have been shown to offer great promise as a transportation biofuel. A European Parliament report [3] that examined biofuels before the biofuels directive was finalised stated *“Because of its non-toxic nature and its allowance for smaller refining units, this approach would probably bring the greatest long-term benefits in terms of regional development, environmental balance and job creation.”* However this option is often discredited due to experiences when operating plant oils in diesel engines. A growing number of studies have examined its usage. Unfortunately the results of these studies have been mixed largely due to variables in both fuel characteristics and engine optimisation.

As an example the Department of Transport commissioned study [1] cited in the consultation papers last summer would at face value show that rapeseed oil fuelled cars have greater emissions than vehicles fuelled with diesel fuel. Examination of this study by someone with experience of the technologies and issues involved shows that the equipment fitted and adjustments made to the vehicles to allow rapeseed oil usage were not sufficient to provide optimised operation. The rapeseed oil used as a fuel was not tested to ensure that its properties were suitable for use as a diesel engine fuel; some properties of relevance were tested and found to be within levels considered appropriate. Other important variables which would affect combustion and reliability were not tested.

Emissions from the use of PPO have also been examined in a recent literature review compiled on behalf of the Dutch government [2]. This review examined a number of different recent studies and drew the conclusion that when PPO emissions were compared to those of diesel fuel there were no clear differences except for reduced NOx.

Also concerns about reliability in diesel engines are often cited. However numerous properly converted vehicles have been shown to operate reliably. German experiences have shown PPO to be a viable alternative with many possible advantages over alternatives [4]. In Germany a fuel standard has been created by a partnership between industry and academia, the German government is now looking at adopting this standard to further promote developments. It has often been stated that if vehicle manufacturers

were encouraged to produce vehicles with engines designed to handle PPO that uptake would be encouraged due to the negation of the expense of conversion. It has been calculated that if engines were produced with PPO capability the costs would be greatly reduced.

Support for PPO in the UK is limited and it appears the government has received little in the way of solid information on the prospects of this biofuel. This would appear to be

largely due to the lack of industry interest in this fuel; currently there are a very limited number of small firms involved in these technologies. The suggestion would be that the financial incentives are insufficient to promote its usage despite its advantages over other options. There has also been much confusion over the tax position of PPO which has slowed uptake.

Results of comparisons between different renewable alternatives generally frame biodiesel (which shares many factors with PPO production) using current intensive chemical heavy input crop production and large scale mill oil extraction. These variables could be significantly improved by the adoption of less intensive crop production (eg. using organic farming methods) and the use of small scale presses which have been proven to be able to supply quality fuel with good overall economic and environmental performance. This allows fuel transportation to be greatly reduced as fuel can be grown and produced close to point of use. Obviously this is a 'best case scenario' but these methods are growing in popularity both in Germany and other EU member states. Cold pressed locally distributed rapeseed fuel has been shown to have an energy balance of 24.85:1 and a CO₂ balance of 14.44:1 [5].

There is also a large potential for the use of other oil crops. Oil based biofuel production has concentrated on feed stocks from readily available food oils. There are a huge number of oil producing plants that could potentially provide a suitable fuel oil and may well lend themselves to better methods of cultivation and better yields; algae is often cited, tree and shrub crops can produce high yields with reduced cultivation inputs.

[1] Dft Biofuels Evaluation – Final Report of Test Programme to Evaluate Emissions Performance of Vegetable Oil Fuel on Two Light Duty Diesel Vehicles
http://www.dft.gov.uk/stellent/groups/dft_roads/documents/page/dft_roads_027622.pdf

[2] Compatibility of pure and blended biofuels with respect to engine performance, durability and emissions - SenterNovem <http://www.novem.nl/default.asp?menuId=10&documentId=150024>

[3] Report on the proposal for a Council directive amending Directive 92/81/EEC with regard to the possibility of applying a reduced rate of excise duty on certain mineral oils containing biofuels and on biofuels (COM(2001) 547 . C5-0030/2002 . 2001/0266(CNS))
Committee on Economic and Monetary Affairs

[4] BioDiesel and Pure Plant Oil Examination of the Effects of German Biofuel Uptake *Prof. Dr. Ernst Schrimppff* Fachhochschule Weihenstephan University of Applied Sciences

[5] Note: Rapeseed Oil for Transport 1: Energy Balance and CO₂ Balance-Based on EMBIO, The Danish Energy Agency's Model for Economic and Environmental Assessment of Biofuels Jacob Bugge Folkcenter for Renewable Energy-Denmark2000

IFHVP TOURNESOL

I.F.H.V.P LOGO	Norme HVP Tournesol		Biocarburant Méthode de production dite Valénergol	
	Propriétés/Valeurs	Unité	Valeur limites	Méthode testée
		min	max	
Densité (15°C)	kg/m ³	910	930	DIN EN ISO 3675 DIN EN ISO 12 185
Point éclair	°C	275	320	DIN EN ISO 22 719
Valeur calorifique	Kj/kg	35.000		DIN 51 900 T3
Viscosité cinématique (20°C)	mm ² /s	55	61	DIN EN ISO 3104
Point de trouble	°C	-6		
Indice de cétane	-	30-33		ISO/DIS 5165
Indice d'iode	g/100g	110	140	DIN 53 241-1
Teneur en soufre	mg/kg		20	ASTM D 5453-93
contamination	mg/kg		25	DIN 51 419
Résidu de carbone	Masse-%		0,4	DIN EN ISO 10 370
Indice d'acide	mg KOH/g		2,0	DIN EN ISO 660
Stabilité de l' Oxydation (à 110°C)	h	5		ISO 6886
Valeur en phosphore	mg/kg		15 ²⁾	ASTM D 3231-94
Teneur en cendre	Masse-%		0,01 ³⁾	DIN 51 575
Teneur en eau	Masse-%		0,075	DIN EN ISO 12 937