



## 2009 Winners Announced at Brussels Conference

**Brussels 17 March 2009 – Embargoed until 18.00 CET**

The winners of the first Sustainable Biofuels Awards were announced today at the World Biofuels Markets conference and exhibition in Brussels.

SEKAB, Argent Energy and PetroAlgae were delighted to pick up the prizes amid fierce competition from industry players.

“The Sustainable Biofuels Awards have been developed to help promote the considerable benefits of biofuels production and to encourage greater focus on sustainability criteria right throughout the biofuels value chain,” said Green Power Conferences event director Nadim Chaudhry.

In its inaugural year, three awards were given out with a shortlist of three per category chosen from nominations and recommendations. The judging panel voted independently on who they felt has provided the greatest sustainability benefits, as measured by GHG savings, environmental impact and further societal benefits of the operations or technology of the nominees.

### **1) Sustainable Bioethanol Award – for a distributor or producer**

#### **Nominees**

- **SEKAB (award collected by Per Carstedt)**
- Greenergy International
- Ineos Bio

### **2) Sustainable Biodiesel Award – for a distributor or producer**

#### **Nominees**

- **Argent Energy (award collected by Dickon Posnett)**
- Neste Oil
- Mabanaf

### **3) Sustainable Biofuels Technology – for a technology supplier**

#### **Nominees**

- **PetroAlgae (award collected by Fred Tennant)**



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- Praj Industries
- Institute of New Energy, Tsinghua University

**Voting Panel:**

Jeff McNeely, Chief Scientist, IUCN

Uwe Fritsche, Oeko Institute

Suzanne Hunt, Hunt Green LLC

Charlotte Opal, Ecole Polytechnique Fédérale de Lausanne

Sebastien Hayes, Ecole Polytechnique Fédérale de Lausanne

Nicole Denis, McKinsey

Sandrine Dixson Decleve, IFQC

Each Judge will vote for one company from each category. On the event of a drawn vote then Jeff McNeely will have the casting vote.

## 1) Sustainable Bioethanol Award – for a distributor or producer

### Company Name **SEKAB**

Company Website [www.sekab.com](http://www.sekab.com)

### Why should this company be nominated?

Together with Brazilian ethanol producers, the Swedish company SEKAB has developed the Verified Sustainable Ethanol Initiative over the past year. The verified and traceable ethanol arrived to Swedish pumps in August 2008. An independent international company will be performing on-site checks to make sure the producers are meeting the system's requirements.

Sweden is far ahead of most EU countries on use of biofuel. As use of ethanol increases there is an increasing demand for sustainability declarations and certification. As the ongoing EU process seems to be dragging on, the trade associations BioAlcohol Fuel Foundation (BAFF), which represents the ethanol market in Sweden, and UNICA, which represents the sugar-cane industry in Brazil, have agreed to jointly drive a process with the aim of shifting the entire Brazilian ethanol industry towards more sustainable production.

#### Aims of the Initiative

1. To physically guarantee Swedish consumers that they are filling up with good ethanol.
2. To increase the offering of verified sustainable ethanol in close collaboration with the Brazilian sugar industry.
3. To persuade other countries in Europe to develop systems for quality and sustainability assurance.
4. To expedite the development of international regulations for sustainable biofuels.

Visit the initiative's website, [www.sustainableethanolinitiative.com](http://www.sustainableethanolinitiative.com)

### How have the GHG savings been measured?

A key requirement for sustainable ethanol is that at least 85 % reduction in fossil carbon dioxide compared with petrol, from a well to-wheel perspective

- Field-to-wheel perspective
  - Cultivation, production, transportation
  - Total CO<sub>2</sub> emissions from Brazil to Sweden
- Calculations according to RTFO principles
- Fossil input: fertilizers, pesticides, fossil energy
- Renewable output: ethanol, energy (steam, electricity)

### Are there any additional social benefits?

#### Other requirements for sustainable ethanol:

#### At least 30 % mechanisation of the harvest now, plus a planned increase in the degree of mechanisation to 100 %

- Benefits of mechanized harvesting:
  - Lower local particle emissions
  - Better work environment
  - Improved reduction of CO<sub>2</sub>
- Disadvantages:
  - Risk of unemployment
- 30 % mechanized harvest first year
- Implementation plan for 100% mechanization

#### Zero tolerance for felling of rain forest

- No deforestation of rainforest is permitted

- Deforestation of other forests according to national laws
  - Permits required
  - Brazilian law: cut down 1 tree, replant 25 new
    - To preserve biodiversity
- Land use change

#### **Zero tolerance for child labour**

- Child labor below 16 years of age
  - Defined according to Brazilian law
- Apprentice from 14 years of age
- In compliance with article 1 and 2 in ILO convention 138

#### **Rights and safety measures for all employees in accordance with UN guidelines**

- Zero tolerance to forced labor ("slave labor")
- Workers right to organize in unions etc.
- All employees must be registered
- Employees must be paid at least minimum wages
- Health & safety policies shall be in place and followed

#### **Ecological consideration in accordance with UNICAs environmental initiative**

- Protection of forests close to water areas
- Protection of water resources
- Program for reuse of water in industrial processes and for conservation of water quality
- Implementation plan for soil conservation
- Plan for reduction of environmental impacts from production

#### **Is there 3rd party verification of the sustainability of the product or technology? Please supply any details.**

##### Verification process

The setup will be similar to a quality-management system. Monitoring and verification will be carried out by an independent third party. In case the third party finds non-compliance, procedures are in place to ensure that this non-compliance is corrected and that it never reoccurs.

##### Three levels of non-compliance:

- Observation
  - Shall be corrected before next audit
- Minor non-compliance
  - Shall be corrected within 3 months
- Major non-compliance
  - A plan for mitigation shall be submitted within 14 days
  - Always followed by an extra audit
- Full traceability of all physical flows

The ethanol production chain has now been controlled. The Brazilian companies delivering the ethanol to the Swedish fuel E85 are behaving properly according to a report by the independent revising company SGS (read more about SGS at [.sgs.](#)).

##### Continuous monitoring that the criteria are being met

- Monitoring and verification of the criteria's shall be done through audits by an independent third party
- Non compliance
  - Observation
    - Shall be corrected before next audit
  - Minor Non Compliance
    - Shall be corrected within 3 months
  - Major Non Compliance
    - A plan for mitigation shall be submitted within 14 days
    - Always followed by an extra audit
- Full traceability of all physical flows

**Company Name: Ineos Bio**

**Company Website: <http://www.ineosbio.com>**

**Why should this company be nominated?**

The INEOS Bio process falls into the third category. It is an advanced thermochemical and biochemical second generation bioethanol technology, which can convert cellulose, hemi-cellulose and lignin efficiently to clean bioethanol through. It delivers at least 90% Greenhouse gas savings compared to petrol, is cost-competitive and is independent of food production. The INEOS Bio second generation bioethanol is expected to take a significant share of the growth in the European and North American bioethanol market.

A key driver for the increased use of biofuels is to reduce the Green house gas (GHG) emissions from the road transport sector. However, the Gallagher review, issued on July 7th 2008 comments; 'there is growing concern about the role of biofuels in rising food prices, accelerating deforestation and doubts about the climate benefits. This has led to serious questions about their sustainability and extensive campaigns against higher targets.

Concern was further raised among policy makers when the paper by Searchinger (Searchinger et al 2008) asserted that US biofuels production on agricultural land displaced existing agricultural production, causing land-use change leading to increased net greenhouse gas (GHG) emissions.'

In addition to delivering greater GHG savings than all existing bioethanol production, the INEOS Bio process does not require food crops or indeed any agricultural land use or agrichemical use. It fully addresses all the concerns raised by the Gallagher review for the production of biofuels for the petrol (gasoline) market. We believe that the INEOS Bio process is the most sustainable bioethanol production process in the World today.

**How have the GHG savings been measured?**

Greenhouse gas savings

An independent life cycle assessment carried out by Eunomia on the production of INEOS Bio Ethanol from waste biomass indicates that greenhouse gas savings of more than 90% vs. petrol should be achieved. This saving is significantly higher than the best performing bioethanol today, which is sugar cane ethanol made in Brazil, which is reported to deliver up to 70% greenhouse gas savings.

**Are there any additional social benefits?**

**Advantages**

Leading economics – The outstanding energy efficiency, selectivity to ethanol and feedstock flexibility of the INEOS Bio second generation bioethanol process result in highly cost-competitive production of ethanol.

Feedstock flexibility - Unlike conventional bioethanol technologies, which use food crops, or even the emerging cellulosic fermentation technologies, which can convert cellulose and hemi-cellulose but not lignin, the INEOS Bio process can convert all ligno-cellulosic materials and other carbon materials into ethanol. The range of organic materials that can be used includes, but is not limited to;

The biodegradable portion of municipal waste (BMW), which includes garden and food wastes

Organic commercial & industrial wastes (C&I)

Contaminated waste wood

Forestry wastes (e.g. brush, bark, saw dust, wood chippings)

Agricultural wastes (e.g. sugar cane bagasse, corn stover, straw)

Lingo-cellulose energy crops (e.g. trees and coppice)

Energy efficient - The winning combination of a thermo-chemical process (gasification) and a low temperature, low pressure biochemical process (bacterial fermentation) with excellent heat integration throughout delivers high energy efficiency.



16-18 March 2009, Brussels Expo Centre

**Biocatalyst advantages** – Conventional catalysts used for the conversion of syngas to transport fuels can be expensive to prepare, are easily poisoned, need to be replaced regularly, require high temperatures and pressures, and can have relatively poor selectivity to the target fuel product (e.g. ethanol or diesel). This all translates to relatively high capital and operating costs. In contrast, the proprietary INEOS biocatalyst is low cost, regenerates itself, is tolerant to impurities in the syngas, has extremely high selectivity to ethanol and operates at low temperature and pressure.

**Security of energy supply** – The feedstock flexibility of the INEOS Bio technology enables almost any country in the world to manufacture a portion of its own road transport fuel from the biomass and wastes it generates. Wherever there are people, wastes are generated and transport fuels are needed. Every major city in the world could potentially have its own INEOS Bio plant or plants.

**Climate friendly** – When the bioethanol is used as a road transport fuel, the greenhouse gas (GHG) emissions are reduced by at least 90% compared to petrol (gasoline). This outstanding GHG performance puts clear water between INEOS Bioethanol and bioethanol made from sugar and starch crops and from emerging cellulosic fermentation technologies.

**Society** – The INEOS Bio process enables the production of clean, renewable road transport fuel to be significantly increased and our dependency on fossil fuels reduced without contributing to rising food prices. New jobs and wealth will be created in the waste and renewable fuels sectors.

**Reduced pressure on land use** - Significant greenhouse gas (GHG) emission savings can be achieved from the road transport sector without increasing pressure on land use, or increasing agrichemical use (e.g. fertilizers and pesticides). The diversion of organic wastes from landfill avoids any harmful effects of landfill.

**World changing technology** – In summary, the INEOS Bio process has the potential to make a substantial contribution to a more sustainable world.

**Is there 3rd party verification of the sustainability of the product or technology? Please supply any details.**

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## 2) Sustainable Biodiesel Award – for a distributor or producer

### Company Name Argent Energy

Company Website ://[www.argentenergy.com](http://www.argentenergy.com).

#### Why should this company be nominated?

Argent Energy is a pioneering producer of biodiesel from wastes and residues (mainly tallow and UCO). It has been necessary to invest in the highest quality technology in order to handle the variable feedstocks but we will only utilise animal fats and used cooking oils. Our policy is to steer clear of any farmed oils, whether they be palm, rape, soy etc, to avoid the worse GHG emission values and worse sustainability scores they offer.

There are a number of environmental benefits of Argent's use of tallow and used cooking oil as they create demand for these products which have few alternative uses.

The use of biodiesel also helps consumers and businesses reduce their carbon footprint - the amount of carbon dioxide emitted as a result of energy used. Argent's biodiesel production displaces carbon dioxide, one of the main gases responsible for global warming. This will contribute significantly to the government's predicted savings of 1 million tonnes of carbon dioxide a year (equivalent to taking 1 million cars off the road) to be achieved by requiring 5 per cent of all road fuels sold in the UK to come from renewable sources by 2010.

Argent Energy's biodiesel plant has been producing biodiesel since March 2005 and can produce around 45,000 tonnes of biodiesel a year, or in excess of 50 million litres.

The main point is that the ecological footprint from biodiesel of all types is more environmentally friendly than mineral diesel. And biodiesel from tallow and used cooking oil is better for the environment than biodiesel produced from virgin oils such as rapeseed oil. Taking into account all the energy used in producing biodiesel from tallow and used cooking oil and then adding the displacement of carbon dioxide, Argent Energy's activity has a net positive effect on the environment

We have further refined our process in the last 12 months to increase the reductions of GHGs. The boiler has historically run off fossil fuel such as gasoil. However, we have now been running the boiler on 100% renewable fuel for over 6 months. The heavier fraction produced from the distillation phase is used in its entirety and if there is any shortfall, which is now a rare occurrence since the improvements to the steam system that has reduced the energy requirements by 15%, we use the biodiesel as the boiler fuel.

Transport is another area of concern for carbon emissions so two thirds of Argent's fleet of trucks has been converted to run on B100. The remaining vehicles are planned for conversion this year which will mean a significant further reduction in GHG emissions. It is now looking to help start a domestic UCO collection scheme in Scotland.

#### How have the GHG savings been measured?

Under a European Community funded research project the manufacture of biodiesel from tallow and used cooking oil in the Argent Energy plant and its subsequent use as a road fuel has been independently assessed by the Technical University of Graz who carried out a Life Cycle Analysis.

The main point is that the ecological footprint from biodiesel of all types is more environmentally friendly than mineral diesel. And biodiesel from tallow and used cooking oil is better for the environment than biodiesel produced from virgin oils such as rapeseed oil. Taking into account all the energy used in producing biodiesel from tallow and used cooking oil and then adding the displacement of carbon dioxide, Argent Energy's activity has a net positive effect on the environment

#### Are there any additional social benefits?

**Is there 3rd party verification of the sustainability of the product or technology? Please supply any details.** See above

## **Company Name Neste Oil**

Company Website <http://www.nesteoil.com>

### **Why should this company be nominated?**

Neste Oil has been at the forefront of innovation in the renewable diesel/biodiesel and sourcing new, sustainable sources for biodiesel primarily the NExBTL Renewable Diesel, which is claimed to be the world's cleanest diesel fuel and also new innovations such as the woody biodiesel project with Stora Enso, see below and [://www.nesteoil.com/default.asp?path=1,41,539](http://www.nesteoil.com/default.asp?path=1,41,539),

Neste Oil has been accepted again into the Dow Jones Sustainability World Index, which features 320 companies from 24 countries that excel in their commitment to a more sustainable future.

Neste Oil has been awarded 'Best in Class' recognition for its social accountability by the Norwegian banking group, Storebrand, included twice in Innovest's Global 100 list of the world's most responsible companies, and featured in the Ethibel Pioneer Investment Register.

#### **Clean diesel fuel from harvesting waste**

Neste Oil and Stora Enso are working together to develop a new generation of biofuel production technology based on using woodbased biomass to help reduce the use of fossil fuels and reduce greenhouse gas emissions. A joint venture pilot plant has been designed and is being built at Stora Enso's mill in Varkaus as the first stage of the project. Biowax produced by the process can be refined into commercial fuel at Neste Oil's Porvoo refinery.

Neste Oil's and Stora Enso's pilot plant will process a range of forest harvesting waste and mill by-products, such as branches, stumps, bark, sawdust, and cutter chips. The advantage of the cellulosebased process lies in the fact that it does not add to the CO2 burden put on the climate as it makes use of the natural cycle that binds carbon to wood.

The overall sustainability of the process is further reinforced by its efficiency. The energy generated by the process can be used in the form of electricity and as steam and district heat by the adjacent paper mill and the local municipality.

### **Neste Oil Sustainability principles for biofuels**

Principles for feedstock:

We are familiar with the life cycle and the origin of our feedstocks.

We select our suppliers carefully with emphasis on the HSE and social performance of the supplier.

We require our suppliers to share the aim of sustainability in operations, with explicit clauses/terms to this effect in mutual agreements.

We carry out supplier audits or otherwise screen the performance of the supply chain, and work together with suppliers to improve their performance.

Principles for processing and manufacture:

We operate highly efficient production processes, which comply with the requirements of ISO and OHSAS environmental, health and safety, and quality standards.

We continually improve the safety performance of production.

We develop our production processes to be able to utilise new raw materials.

Principles for end products:

We develop and market high-quality products that help to reduce harmful emissions without limitations to existing engines.

We aim to continuously improve the greenhouse gas balance and the energy balance of the whole product chain in order to diminish the impacts on the environment.

We offer our customers products and our partners technologies that comply with current and future regulations.



16-18 March 2009, Brussels Expo Centre

**How have the GHG savings been measured?**

The precise reductions of greenhouse gases depend on the raw materials used in production, but are between 40% to 60% throughout the whole product lifecycle

**Are there any additional social benefits?**

We select our suppliers carefully with emphasis on the HSE and social performance of the supplier.

Supplier selections - Neste Oil has accepted following supplier criteria.

In addition to compliance with the applicable laws and regulations of the country in question, Neste Oil expects its suppliers to:  
support sustainable development and commit to continuous improvement of Health, Safety and Environment (HSE) issues in its operations; respect human rights and actively work towards employee safety; cooperate with governments and organisations in the development and implementation of effective HSE and sustainability regulations and standards; carry out its businesses according to good business ethics.

**Is there 3rd party verification of the sustainability of the product or technology? Please supply any details.**

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**Company Name: Mabanaft**

Company Website: [www.mabanaft.co.uk](http://www.mabanaft.co.uk)

Why should this company be nominated?

They received a high aggregate score in the interim Renewable Fuels Agency report for fossil fuels companies April-Oct 08 with 49% of the fuel meeting the environment standard, 22% meeting the social standard and 54% meeting the GHG savings standard. This performance outperformed all the other fossil fuel distributors in the UK market and in particular Esso, Total and Chevron who did not conform to any of the targets. See [://www.renewablefuelsagency.org/db/documents/RFA\\_quarterly\\_report\\_Apr\\_Oct\\_2008](http://www.renewablefuelsagency.org/db/documents/RFA_quarterly_report_Apr_Oct_2008).

**How have the GHG savings been measured?**

Carbon Intensity

- Carbon intensity is a measure of the greenhouse gas (GHG) emissions of the fuel chain from 'well-to-wheel'.

- Different GHGs have different potencies (some have a greater contribution to global warming than others).

- To account for this, all GHGs are expressed in terms of their strength relative to carbon dioxide (CO<sub>2</sub>e).

Greenhouse gas emissions

- Greenhouse gas (GHG) emissions of different biofuels can vary significantly depending on the system of cultivation,

processing, and transportation of feedstock.

- The data collected takes into account GHG emissions of the fuel chain from the farm to the forecourt incorporating

data on feedstock, country of origin and land-use change.

- GHG saving refers to the amount of GHGs that have not been emitted to the atmosphere due to replacing petrol and

diesel with bioethanol and biodiesel or biogas, respectively.

**Are there any additional social benefits?**

The RTFO is built around seven sustainability principles; five environmental and two social. These seven principles have been used to define the RTFO sustainability meta-standard. A meta-standard approach enables the use of existing certification schemes to meet the standard. Existing schemes, such as the UK's Assured Combinable Crops Scheme, are assessed against the RTFO principles.

No schemes currently meet all of the environmental and social principles; although one scheme does meet all of the environmental principles. However, any scheme that meets an adequate number of criteria is considered a 'qualifying standard', and fuel companies can report these to the RFA. Fuels from wastes (e.g. used cooking oil and tallow) are also automatically considered to be sustainable to the qualifying level.

**Is there 3rd party verification of the sustainability of the product or technology? Please supply any details.**

Suppliers are also permitted to set up their own auditing procedures to demonstrate that feedstocks meet the RTFO meta-standard. Other standards can also be reported to the RFA and count towards the data capture target; these include standards that have not yet been benchmarked against the RTFO meta-standard, or standards that have been benchmarked, but do not meet sufficient criteria to be awarded the qualifying level status.

### 3) Sustainable Biofuels Technology – for a technology supplier

**Company name : PetroAlgae**

Company Website : [www.petroalgae.com](http://www.petroalgae.com)

**Why should this company be nominated?**

PetroAlgae has developed a remarkable technology to grow, harvest and refine animal feed and biodiesel from algae.

Algae oil is an economically viable solution Because it is a cost-effective feedstock for biodiesel producers:  
o Algae oil is a good substitute for soybean oil, rapeseed oil and palm oil because it's grown on non-arable acres that do not utilize precious farmland.

o A 10,000 acre PetroAlgae system would produce over 50 million gallons of biodiesel annually, plus over 600,000 tones of high-protein animal feed meal.

o Oil yield per acre is 50 to 100x higher than soybean or palm or rapeseed.

Instead of contributing to greenhouse gases, algae actually consume CO<sub>2</sub>.

o Our algae consume about 2.2 pounds of CO<sub>2</sub> for every one pound of growth.

o For example, the biggest CO<sub>2</sub> emitters by volume are coal-fired power plants. We can help solve their emissions problem by using CO<sub>2</sub> emission from the power plant to grow algae in our system.

**How have the GHG savings been measured?**

CO<sub>2</sub> used in the algae growth process will be measured by weighing product outputs; oil/biodiesel and high-protein meal. Algae's appetite for CO<sub>2</sub> is well known and PetroAlgae's growth system uses emissions from local emitters as an input source to the growth process, cleaning emission gases and utilizing the CO<sub>2</sub>.

**Are there any additional social benefits?**

Algae oil does not suffer from the sort of social and environmental issues that are driving the rest of the biofuels industry.

o Algae biodiesel does not compete with the food business. It is "grown" without the use of farmland and we recycle 98% of the water we use.

We know it is economically sustainable.

o The PetroAlgae system can produce 50 to 100times more oil per acre than any other oil source currently used for biodiesel production.

o Algae-oil producers will have a built-in advantage of lower cost of land and the ability to locate very close to biodiesel markets.

Algae oil production allows the growing region to be energy self sufficient

Additionally, it reduces the reliance on petroleum fuels and creates local jobs.

**Is there 3rd party verification of the sustainability of the product or technology, please supply any details?**

We have endorsement from the Environmental Defense Fund (EDF) and are planning for a sustainability audit.

Many countries recognize algae as a viable resource of energy and have established laws to support its development.

**Company name: Praj Industries Limited**

Company Website: [www.praj.net](http://www.praj.net)

**Why should this company be nominated?** : Praj has worked for over twenty five years on sustainable solutions for biofuels production which have resulted into specific reduction in energy consumption and in terms of overall wastewater generation and water usage through technologies like:

1. Integrated Evaporation with distillation demonstrated at British Sugar Plant and at many plants in India, Thailand, etc.
2. Water recycle including waste streams to reduce water intake and to reduce wastewater generation
3. Introduction of sweet sorghum feedstock for ethanol production which consumes far less water in cultivation and processing. First commercial demo plant is completed in India.
4. Setting up of Pilot facilities for cellulosic ethanol in a short period of under one year
5. Successfully demonstrating Concentration followed by Incineration technology on commercial scale.

**How have the GHG savings been measured?**

Have been measured in terms of energy use across various plants. In the multi-pressure, integrated plants the savings in energy are as much as 50% and the reduction in wastewater for cane molasses based distillery is from 12-15 litres to 2-4 litres per litre of ethanol production.

**Are there any additional social benefits?**

In the case of sweet sorghum cultivation, farming community in the area of western India have recieved benefits in terms of diversity of crop as well as in terms of lower water consumption in fields. This area is low in water table as well in terms of rainfall when compared to another region of the same state.

**Is there 3rd party verification of the sustainability of the product or technology, please supply any details?**

Can be given by client. Company Name

**Company: Institute of New Energy Technology, Tsinghua University**

Company Website: [Tsinghua University, Beijing](http://Tsinghua University, Beijing)

**Why should this company be nominated?**

Prof. Shi-zhong Li is the developer of the new ASSF (Advanced Solid State Fermentation) Technology for producing BioFuels from Sweet Sorghum stalks.

**How have the GHG savings been measured?**

24 hours fermentation instead of 56 hrs for Corn, economical at oil prices at \$36 p/bbl while corn is \$70 p/bbl. Each unit producing 10,000 tons of ethanol & other bi-products.

**Are there any additional social benefits?**

By-products from sweet sorghum stalks baggase include fertilizer, CO<sub>2</sub>, animal feed, pellets to be used as charcoal for cooking instead of cutting trees by villagers, while farmers maintain the grains.

**Is there 3rd party verification of the sustainability of the product or technology, please supply any details?**

Institute of New Energy Technology, Tsinghua University, Beijing, PRC

USDA who sponsored and introduced the technology at International Sorghum conference in Houston, Texas August 2008.