



# Newsletter

Issue 9: April, 2004

## EDITORS NOTES

David Gregg

<mailto:djgregg@interchange.ubc.ca>

Welcome back to the continuation of Task 39. The newsletter format and content has changed to better reflect structural changes in the Task, better balance the location of time-sensitive material, such as World Events, Future Meetings and Contacts, and reduce the size of the newsletter.

Task 39 has changed to a more integrated structure to reflect a closer tie between the policy and technical areas. Both the website and the newsletter will have single sections that combine the previous subtasks i.e., Biodiesel, Ethanol and Policy. The website will be modified in May to have an “Activities” menu that includes a chronological listing of relevant meetings. In the interim the meetings can be found under the “News” menu.

The newsletter format has been revised in line with past feedback to be shorter (8-10 pages) and focusing on a feature theme instead of topics from each subtask. Tentative themes are listed below and please feel free to contact me about writing for any or all of these themes.

Year	Issue	Topics
2004	April	Scale-up & commercialization efforts
	June	Technically-oriented policy issues
	September	Biodiesel opportunities
2005	March	Scale-up & commercialization efforts
	June	Market approaches to commercialization
	September	Process and lifecycle modeling R&D
2006	March	Scale-up & commercialization efforts
	June	Comparing national goals with biofuel potentials
	September	Biofuels: how close are we to the competition?

In an effort to reduce the size of the newsletter the more time sensitive material, which includes the World Events, Future Meetings, and Contacts sections, will eventually be moved to the Task 39 website. This makes the information

more timely and available wherever there is web access. For this issue the website only contains a static listing of World Events but eventually I will be making this feature dynamic so that more frequent updates will be available.

As always please let me know how I can better serve your wishes and needs.

## FROM THE TASK LEADER

Jack Saddler

<mailto:saddler@interchange.ubc.ca>

As many of you know, IEA Bioenergy has historically carried out its program of work in triennium (3 year) cycles, with many of the Tasks within IEA Bioenergy, evolving around this timeline. At the end of the last triennium there was a recommendation from the IEA Bioenergy Executive Committee (ExCo) for an integration of the separate Technical and Policy Tasks that were related to the production of liquid biofuels from biomass. As is described in more detail in this newsletter, the interface between the technical and policy aspects of biomass-to-liquid biofuels will be the main focus of the Task 39 “Liquid Biofuels” network over the next 3 years. I want to welcome all the new participants to the newly integrated Task 39 activities and to encourage you to actively participate! The best way to get “value for your money” is to get involved in our events and informational exchanges! I also want to use this opportunity to thank our colleague, Dr Don Stevens at PNRL, in Washington State, for all his past work and leadership in the liquid biofuels area. Don was one of the “founding fathers” of IEA Bioenergy programs and has been involved in various positions for close to twenty years. Thank you Don!

In future issues of the newsletter I will try and give you a sense of where the network is going and what Task 39 has done to try and catalyze the commercialization of the various biomass-to-liquid biofuels. Please let us know what you think of this newsletter and I again encourage you to be an active participant, from submitting news items and letters to the editor, to actively engaging in our workshops. We are only as good as our “networking” members!

## INTRODUCTION TO TASK 39's 2<sup>nd</sup> TRIENNium



The International Energy Agency Bioenergy Program has maintained Tasks with a biofuels focus since its inception. In the late 1990's, Task 26 focused on the technical process of bioconversion, while Task 27 examined the policy issues involved with biofuel production and commercialization. IEA Bioenergy Task 39, initiated in 2001, combines technical and policy initiatives into a single framework. Today, Task 39 continues working to promote technology and policy for liquid biofuels.

Biofuels, including ethanol, biodiesel, and biohydrogen, are derived from biomass generated in agricultural or forest operations, or sourced from urban waste streams. Biomass can be viewed as a renewable source of chemical building blocks; as such, they represent a sustainable option to fossil petrochemical resources. The starch and celluloses found in all crops and trees contain carbohydrates that can be utilized for ethanol production. Of particular interest are oilseed plants, which are a source of vegetable oil and therefore a potential feedstock for biodiesel production. Biofuels are created through a bioconversion process, which first serves to reduce biomass into chemical building blocks, which can then be utilized for biofuels and other value-added products. For ethanol, the bioconversion process generates hexose sugars, in particular glucose, from starch or lignocellulosic materials. These sugars can be fermented into alcohols, while any remaining material (lignin, other sugars) may be utilized for the generation of co-products. For biodiesel, the process involves the bioconversion of vegetable oils derived from oilseeds to alkyl esters or biodiesel, as well as glycerine as a co-product.

Ethanol and biodiesel are of particular interest to IEA Bioenergy Task 39 because they can be blended with existing transportation fuels and readily used in today's vehicles. Steady growth in use of these biofuels may serve to bridge our society from 'the end of the oil age' (The Economist, October 21 2003) into a carbohydrate-based economy. In the United States and Canada, over 11 billion litres of ethanol was produced and used as fuel in 2002 – enough to supply the annual fuel needs of both British Columbia and Alberta in Canada, or Spain in Europe. In the future, it is expected that biofuel use will grow. The European Union has recommended that, by 2010, 5% of its total fuel needs should be met by renewable fuels. Significantly, ethanol is characterized by a relatively advantageous hydrogen-to-carbon ratio when compared to petrochemicals, which makes ethanol a practical hydrogen carrier for future fuel cell vehicles and generating stations.

IEA Bioenergy Task 39 (2004-2006) will build upon the successes of previous IEA Bioenergy work in the area. The goal of this Task is to establish coordinated policy and technical networks that will assist participants in their efforts to develop and deploy liquid biofuels. Policy, legislative/regulative, and market issues used to encourage growth of ethanol and biodiesel in certain IEA Bioenergy countries will be examined to assist participants in building the infrastructure for biofuels. The Task will also catalyze and coordinate technical RD&D efforts to assist participants in the development of advanced, lower cost biofuels technologies. This effort will continue and expand the technical information exchange network developed by IEA Bioenergy over several years. The Task will also conduct a project in the area of biodiesel to deal specifically with the development needs of this alternative. In conducting its work the Task will establish a comprehensive web site to assist information exchange among participants and will prepare and distribute periodic newsletters on the various aspects of biofuels.

For more information on IEA Bioenergy Task 39, please contact:

- Jack Saddler (Task Leader) at <mailto:jack.saddler@ubc.ca>
- Eric van den Heuvel (Associate Task Leader, Policy) at <mailto:e.van.den.heuvel@novem.nl>
- Warren Mabee (Associate Task Leader, Policy) at <mailto:warren.mabee@ubc.ca>
- Manfred Wörgetter (Associate Task Leader, Biodiesel) at <mailto:manfred.woergetter@btl.bmlfuw.gv.at>
- David Gregg (Newsletter and Webmaster) at <mailto:djgregg@interchange.ubc.ca>

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## TENTATIVE PLANNED ACTIVITIES

The Task 39 executive has been busy over the last 4 months tentatively organizing the activities for the next three years (listed below). Note that we have some meetings planned without a location and there are opportunities to submit short articles (200-1000 words) for the newsletter based on the previous list of general themes. If you would like to host one of these meetings please contact either Jack Saddler or Warren Mabee. If you would like to submit an article, contact David Gregg.

There will be two meetings this year, the first an organizational meeting on May 10th with parallel sessions in Chattanooga, USA and the other in Rome, Italy, and the second a technical/policy meeting at the University of Kyoto in Japan from December 13-15<sup>th</sup>. More information is available from Warren Mabee, <mailto:warren.mabee@ubc.ca>. The latter meeting is in association with the Kyoto University COE meeting and more details can be found in the additional attachments to the newsletter email as well as from either Warren Mabee or the local organizer Shiro Saka, <mailto:saka@energy.kyoto-u.ac.jp>.

We are also planning on two meetings per annum for the remaining two years of the triennium. The details for those meetings are still being worked out, but we are happy to announce that Lund University (Sweden) will host a meeting in November 2005, while University of British Columbia (Canada) will host the final task meeting in November 2006.

There will be three newsletters per year, with feature themes as discussed previously in the Editors Notes section.

Reports will also be a part of the deliverables for this Task; the nature and topics of these reports will be discussed at the meeting in Rome/Chattanooga, May 2004.

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## FUTURE WORKSHOPS/SYMPOSIA

May 9-12, 2004  
26th Symposium on Biotechnology For Fuels and Chemicals  
Chattanooga, USA  
<http://www.ct.ornl.gov/symposium/>

May 10, 2004  
Task 39 Organizational meeting  
(parallel sessions) Chattanooga, USA and Rome, Italy  
Task 39 Contact: Warren Mabee,  
<mailto:warren.mabee@ubc.ca>

May 10-14, 2004  
2<sup>nd</sup> World Conference and Technology Exhibition on Biomass for Energy, Industry and Climate Protection  
Rome, Italy  
<http://www.conference-biomass.com/>

May 16-20, 2004  
Bio-Science Week  
Delta Bessborough Hotel  
Saskatoon, Saskatchewan, Canada  
<http://www.bio-science.sk.ca>

May 18-21, 2004  
Smallwood 2004: Creating Solutions for Using Small Trees  
Radisson Hotel Sacramento  
Sacramento, California, USA  
<http://www.forestprod.org>

May 29-31, 2004  
Second World Renewable Energy Forum: Renewing Civilization by Renewable Energy  
Bonn, Germany  
<http://www.world-renewable-energy-forum.org/2004/index.htm>

June 2-4, 2004  
World Bioenergy Conference & Exhibition  
Jönköping, Sweden  
<http://www.elmia.se/worldbioenergy/>

June 22-25, 2004  
20<sup>th</sup> Anniversary International Fuel Ethanol Workshop & Trade Show  
Monona Terrace Conference Center  
Madison Wisconsin  
<http://www.bbiethanol.com/few/>

December 13-15, 2004  
Task 39 Technical/Policy meeting  
University of Kyoto  
Kyoto, Japan  
Task 39 Contact: Warren Mabee, <mailto:warren.mabee@ubc.ca>  
Local Contact: Shiro Saka,  
<mailto:saka@energy.kyoto-u.ac.jp>

December 17-18, 2004  
Kyoto University 21 COE  
The 2<sup>nd</sup> International Symposium on Sustainable Energy System  
Kyoto University Clock Tower Centennial Hall  
Local Contact: Shiro Saka,  
<mailto:saka@energy.kyoto-u.ac.jp>

May 2005  
Task 39 Organizational/Technical/Policy meeting

Breckenridge, USA  
Task 39 Contact: Warren Mabee,  
<mailto:warren.mabee@ubc.ca>

November/December 2005  
Task 39 Technical/Policy meeting  
(tentative) Lund, Sweden  
Task 39 Contact: Warren Mabee,  
<mailto:warren.mabee@ubc.ca>

May 2006  
Task 39 Organizational/Technical/Policy meeting  
Location to be determined  
Task 39 Contact: Warren Mabee,  
<mailto:warren.mabee@ubc.ca>

November/December 2006  
Task 39 Technical/Policy meeting  
(tentative) Vancouver BC  
Task 39 Contact: Warren Mabee,  
<mailto:warren.mabee@ubc.ca>

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## FEATURE ARTICLE

### UPDATE ON SCALE-UP & COMMERCIALIZATION EFFORTS FOR LIGNOCELLULOSIC ETHANOL PRODUCTION

*David Gregg*  
<mailto:dgreggs@interchange.ubc.ca>

These are very exciting times for the lignocellulose to ethanol community as the many years of R&D are now being tested and put into practice at a demonstration and commercial scale. There are three particular examples of pilot capacity for lignocellulose-to-ethanol coming on-line that we would like to share with you today.

#### IOGEN (Canada)

Iogen Corporation in Ottawa, Canada announced on April 21<sup>st</sup> 2004 that it is producing the world's first cellulose-based ethanol fuel for commercial use. Cellulose ethanol is an ultra-low CO<sub>2</sub> emission fuel that can be blended with gasoline and used in cars today.

Iogen President, Brian Foody, stated that "Iogen's cellulose ethanol technology is a result of more than 25 years of research and development. Iogen and its partners (Shell, Petro-Canada and the Government of Canada) have committed over C\$110 million, and the company owns and operates the world's only cellulose ethanol demonstration scale facility."

The first shipment of 5,000 litres of cellulose ethanol will be blended with regular unleaded gasoline at a Petro-Canada refinery in Montreal, Quebec. It will then be shipped to some of the company's gas stations.

Iogen's cellulose ethanol demonstration facility is the final proving stage prior to the rollout of full-scale commercial plants. The company is working with its partners to finalize plant locations for this facility..

#### ABENGOA (Europe/United States)

Abengoa Bioenergía operates two bioethanol plants in Spain - Ecocarburantes Españoles and Bioetanol Galicia S.A. - with a total installed capacity of 142 and 168 million liters per year, respectively. A third plant, called Biocarburantes de Castilla y León, is under construction in Salamanca, with Ebro Puleva as a partner. This plant's annual production will be 200 million liters, of which five million liters will derive from the conversion of the biomass content in cereal. Bioconversion will be achieved using a novel technology that Abengoa is developing.

The company also operates three bioethanol plants in the United States, with a total annual capacity of 360 million liters (95 million gallons), making Abengoa Bioenergía the world's second largest, and Europe's No. 1, bioethanol producer.

Abengoa Bioenergia and KWST (Kraul & Wilkening u. Stelling Kommanditgesellschaft-GmbH & Co.) have signed a contract with PCK to supply 43 million liters of dehydrated bioethanol at its Schwedt refinery (Germany) throughout 2004. Deliveries will be made monthly in accordance with purchasing needs. The contract is in addition to an agreement with the Swedish oil company, Svenska Shell, to supply twelve million liters of bioethanol.

PCK is a joint venture of British Petroleum (37.5 percent), Shell (37.5 percent), Total (16.6 percent) and Agip (8.4 percent). Its refinery processes 9.5 million tons of crude oil per year. PCK will use the bioethanol to produce ETBE, an environmentally friendly, oxygenated component of lead-free gasoline. The MTBE unit of PCK's refinery, adapted for ETBE production, has an annual capacity of 85,000 tons.

#### ETEK ETANOLTEKNIK (Sweden)

Six years ago, Swedish regional energy companies formed a new company called Etek Etanolteknik (Ethanol technology) to develop the technology for ethanol production from softwood residues. Etek was responsible for the process design, construction and operation of a pilot plant slated to open this spring.



The plant will be linked to the three universities in the region, and will be located in Örnsköldsvik, 500 kilometres north of Stockholm. It will utilize 2 tons of dry softwood to produce 400-500 litres ethanol per day. The pilot plant will be a complete industrial plant with all the required unit operations including hydrolysis, dewatering, fermentation, distillation and recycling of process streams.

The Swedish Prime minister will officially open the facility at an inauguration ceremony on the 26 of May, 2004. To verify the process and technology and to get more accurate design data for production plants, Etek will need to operate and evaluate the pilot plant for about two years, before they design a demonstration plant with the capacity of 30-60 000 000 litres/year.

*For more information, please check the following sources:*

[http://www.iogen.ca/HTML2/news/04\\_21\\_2004.html](http://www.iogen.ca/HTML2/news/04_21_2004.html)

<http://www.abengoabioenergy.com/feature.cfm?page=2&lang=1>

<http://www.etek.se>

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## WORLD EVENTS/INFORMATION

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### APRIL

Cellulose ethanol is ready to go - Iogen producing world's first cellulose ethanol fuel

[http://www.iogen.ca/HTML2/news/04\\_21\\_2004.html](http://www.iogen.ca/HTML2/news/04_21_2004.html)

Another extension hinders construction of ethanol plant

<http://www.abc.net.au/southqld/news/200404/s1090781.htm>

Climate change: EP vote paves the way for global fight against climate change

[http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p\\_action=gettext&doc=IP-04/505/0/RAPID&lg=en&display=](http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p_action=gettext&doc=IP-04/505/0/RAPID&lg=en&display=)

Iowa could be top ethanol producer in the United States by next year

[http://www.zwir.com/site/news.cfm?BRD=2035&dept\\_id=238094&newsid=11345839&PAG=461&rfi=9](http://www.zwir.com/site/news.cfm?BRD=2035&dept_id=238094&newsid=11345839&PAG=461&rfi=9)

Highest Biodiesel Subsidies in US History

<http://www.solaraccess.com/news/story?storyid=6546>

Biodiesel Set to Take off at Miami Airport

<http://www.solaraccess.com/news/story?storyid=6543>

Yet Another Benefit of Green Tea

[http://www.innovations-report.com/html/reports/process\\_engineering/report-28203.html](http://www.innovations-report.com/html/reports/process_engineering/report-28203.html)

Buses that run on fish oil?

<http://cnews.canoe.ca/CNEWS/Canada/2004/04/18/427818-cp.html>

Abengoa Bioenergy Assumes Control of Ravenna Ethanol Plant

<http://www.abengoabioenergy.com/about/index.cfm?page=5&lang=1&headline=18>

Exploring the ancillary benefits of the Kyoto Protocol for air pollution in Europe

[http://reports.eea.eu.int/technical\\_report\\_2004\\_93/en](http://reports.eea.eu.int/technical_report_2004_93/en)

House Of Representatives Passes Highway Bill Including Ethanol Incentive Extension/Htf Fix

<http://www.bbiethanol.com/news/view.cgi?article=967>

The Man We Called 'Mr. Gasohol'

<http://www.bbiethanol.com/news/view.cgi?article=966>

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## MARCH

Renewable Energy Laboratory Receives Distinguished Service Award

<http://www.bbiethanol.com/news/view.cgi?article=963>

First retail biodiesel station in Canada opens

<http://www.bbiethanol.com/news/view.cgi?article=961>

"Towards a low carbon economy"

[http://europa.eu.int/rapid/start/cgi/guesten.ksh?p\\_action=gettext&doc=SPEECH/04/127/0/RAPID&lg=EN&display=](http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action=gettext&doc=SPEECH/04/127/0/RAPID&lg=EN&display=)

Climate Change: All provisions of the Kyoto Protocol now legally binding in the EU

[http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p\\_action=gettext&doc=IP-04/322/0/RAPID&lg=en&display=](http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p_action=gettext&doc=IP-04/322/0/RAPID&lg=en&display=)

Cruising the Ethanol Highway

<http://www.bbiethanol.com/news/view.cgi?article=959>

Kyoto Protocol

[http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p\\_action=gettext&doc=MEMO/04/440/RAPID&lg=EN&display=](http://www.europa.eu.int/rapid/start/cgi/guesten.ksh?p_action=gettext&doc=MEMO/04/440/RAPID&lg=EN&display=)

Questions & Answers on Emissions Trading and National Allocation Plans

[http://europa.eu.int/rapid/start/cgi/guesten.ksh?p\\_action=gettext&doc=MEMO/04/440/RAPID&lg=EN&display=](http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action=gettext&doc=MEMO/04/440/RAPID&lg=EN&display=)

Hydrogen Gets Boost From Ethanol

<http://www.bbiethanol.com/news/view.cgi?article=958>

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## FEBRUARY

Highway bill includes ethanol tax 'fix

<http://www.bbiethanol.com/news/view.cgi?article=956>

Commission raises no objections to a total exemption from excise duty in favour of biofuels in Germany

[http://europa.eu.int/rapid/start.cgi/guesten.ksh?p\\_action.gettxt=qt&doc=IP04/195/00RAPID&lg=EN](http://europa.eu.int/rapid/start.cgi/guesten.ksh?p_action.gettxt=qt&doc=IP04/195/00RAPID&lg=EN)

CO2 emissions from new cars in the EU down by more than 10% since 1995

[http://europa.eu.int/rapid/start.cgi/guesten.ksh?p\\_action.gettxt=qt&doc=IP04/195/00RAPID&lg=EN&display=](http://europa.eu.int/rapid/start.cgi/guesten.ksh?p_action.gettxt=qt&doc=IP04/195/00RAPID&lg=EN&display=)

Novozymes exceeds final milestone in biomass-to-ethanol project

<http://www.bbiethanol.com/news/view.cgi?article=952>

Facility Prepares for Biodiesel Processing

<http://www.bbiethanol.com/news/view.cgi?article=951>

Ethanol backers await word on funding

<http://www.bbiethanol.com/news/view.cgi?article=950>

U.S. Senate Tax Committee Increases Highway Funding

<http://www.bbiethanol.com/news/view.cgi?article=949>

Clean Diesel's New Biodiesel Blend Reduces Particulates and NOx

<http://www.bbiethanol.com/news/view.cgi?article=948>

US lawmakers to block ethanol boost in highway bill

<http://www.bbiethanol.com/news/view.cgi?article=947>

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## JANUARY

Studies refute misconceptions about ethanol

<http://www.bbiethanol.com/news/view.cgi?article=940>

Biodiesel Association aimed at Kyoto targets

<http://www.bbiethanol.com/news/view.cgi?article=934>

Volkswagen, ADM team up to develop biodiesel fuel

<http://www.bbiethanol.com/news/view.cgi?article=931>

'Biodiesel' good for Georgia, official says

<http://www.bbiethanol.com/news/view.cgi?article=928>

Lawsuit filed against ethanol plant

<http://www.bbiethanol.com/news/view.cgi?article=927>

Resort station sells biodiesel to public

<http://www.bbiethanol.com/news/view.cgi?article=926>

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## DECEMBER

Exports of Bioethanol increase and New Markets open

<http://www.abengobioenergy.com/about/index.cfm?page=5&lang=1&headline=8>

Demand for ethanol could fuel Nebraska

<http://www.bbiethanol.com/news/view.cgi?article=920>

Biodiesel fuel experiment begins

<http://www.bbiethanol.com/news/view.cgi?article=919>

Biofuels companies to build second biodiesel facility near Phoenix

<http://www.bbiethanol.com/news/view.cgi?article=917>

## CONTACT INFORMATION

Please find information below for both the IEA Bioenergy contacts and IEA Bioenergy Task 39 contacts. Additional information is available at <http://www.iea.org> and <http://www.ieabioenergy.com>.

## IEA BIOENERGY TASK 39 MANAGEMENT TEAM

Position	Contact Person
Operating Agent: Canada	Peter Hall <a href="mailto:phall@nrcan.gc.ca">mailto:phall@nrcan.gc.ca</a>
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	IEA Task 39 Country Representative
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Netherlands	Erik Wissema <a href="mailto:e.w.j.wissema@minez.nl">mailto:e.w.j.wissema@minez.nl</a>  Eric van den Heuvel <a href="mailto:e.van.den.heuvel@novem.nl">mailto:e.van.den.heuvel@novem.nl</a>
Sweden	Björn Telenius <a href="mailto:bjorn.telenius@stem.se">mailto:bjorn.telenius@stem.se</a>  Bärbel Hahn-Hägerdal <a href="mailto:barbel.hahn-hagerdal@tmb.lth.se">mailto:barbel.hahn-hagerdal@tmb.lth.se</a>
UK	Gary Shanahan <a href="mailto:gary.shanahan@dti.gov.uk">mailto:gary.shanahan@dti.gov.uk</a>  Anthony Sidwell <a href="mailto:asidwell@britishsugar.co.uk">mailto:asidwell@britishsugar.co.uk</a>
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## IEA MEMBERSHIP

Country/Org.	IEA	Bioener-	Task 39
Australia	✓ Bio-	✓	
Austria	✓	✓	✓
Belgium	✓ ✓ Bio-	✓	
Brazil		✓	
Canada	✓	✓	✓
Croatia		✓	
Czech Rep.	✓		
Denmark	✓	✓	✓
European Comm.	✓	✓	✓
Finland	✓	✓	✓
France	✓ Bio-	✓	
Germany	✓		
Greece	✓		
Hungary	✓		
Ireland	✓	✓	✓
Italy	✓	✓	
Japan	✓ Bio-	✓	
Korea	✓		
Luxembourg	✓		
Netherlands	✓	✓	✓
New Zealand	✓ Bio-	✓	
Norway	✓ Bio-	✓	
Portugal	✓		
Spain	✓		
Sweden	✓	✓	✓
Switzerland	✓	✓	
Turkey	✓		
UK	✓	✓	✓
USA	✓	✓	✓
<b>Total</b>	<b>27</b>	<b>20</b>	<b>10</b>