

## WORKSHOP

# ENERGY CROPS & BIOGAS PATHWAYS TO SUCCESS?

**Location:** Hoog Brabant Conference Center  
Radboudkwartier 23, 3511 CC Utrecht, The Netherlands

**Date:** September 22, 2005

### Aims

The primary interest of the organisers is in biogas production, but the purpose of this workshop is to bring together leading specialists in related aspects of sustainable energy production and agricultural systems to share lessons and explore common concepts. The workshop is limited to an maximum of 50 invited participants.

### Workshop organisers

The workshop is organised as a joint session between the IEA Bioenergy Task 37 working group „Energy from Biogas & Landfill Gas“ (Novaenergie Switzerland) and the EU-funded 6<sup>th</sup> Framework project „Renewable Energy from Crops and Agrowastes“ (“CROPGEN” – University of Southampton, UK).

### Local organisers

Wendy Sanders, WUR, Wageningen and John Neeft, Senter Novem, Utrecht, The Netherlands.

### Programme committee

Rudolf Braun (Chair), Charles Banks, Sonia Heaven, Owe Jönsson, Jules van Lier, Arthur Wellinger

### Workshop secretary

Rudolf Braun, Inst. of Envntl. Biotechn., Dept. for Agrobiotechn., Univ. of Nat. Res. & Appl. Life Sci. Vienna; A-3430 Tulln Austria, Tel +43 2272 66280 502, Fax: +43 2272 66280 503, email: <[Rudolf.Braun@boku.ac.at](mailto:Rudolf.Braun@boku.ac.at)>

## PROGRAMME

Introduction: *Dr. Arthur Wellinger*

**TOPIC 1: 09<sup>00</sup>-10<sup>45</sup> hrs**

**„Identification and development of crops for energy production”**

Potential of plant breeding for use in biochemically mediated energy production – a 20 year perspective; biomass composition; availability; nutrient balance; storage capabilities; yields and productivities; perennial plants; crop rotation; fertilizer and pesticide consumption; drought resistant plants; other climatic impacts; diversity of species.

Chair: *Prof. Dr. Alan Swinbank, Univ. Reading, UK*

Introductory presentation: 09<sup>15</sup>-09<sup>45</sup> hrs

*Prof. Dr. Dr. h.c. Wolfgang Friedt, Justus Liebig University Giessen, Germany*

**„Plant breeding potential to improve energy crops for the use in biogas plants“**

Reports on current research projects: 09<sup>45</sup>-10<sup>15</sup> hrs

*Dr. Wolter Elbersen, WUR, The Netherlands*

**„Switchgrass and Miscanthus as Energy Crops – Agricultural aspects“**

*Dr. Berien Elbersen, WUR, The Netherlands*

**„Biodiversity impacts of enhanced energy crop production in EU farmland areas“**

Discussion: 10<sup>15</sup>-10<sup>45</sup> hrs

Scientific panel topic 1:

*Dr. Andrew Riche, Rothamsted Research, UK*

*Dr. John Clifton-Brown, Institute for Grasslands Research, UK*

*Dr. Myrsini Christou, CRES, Greece*

*Prof. Dr. Dr. h.c. Wolfgang Friedt, Justus Liebig Univ., Giessen, Germany*

Coffee break: 10<sup>45</sup> – 11<sup>00</sup> hrs

**TOPIC 2: 11<sup>00</sup>-12<sup>45</sup> hrs**

**“Biomass processing concepts, storage, pre- & post treatment, technologies and impacts”**

Large scale centralised, vs. small / medium scale decentralised bio-energy production; collection and transport of raw materials (crops) and residues (digestate); storage and pre-treatment (mechanical, chemical and biological); feeding and digestion systems; closed nutrient cycles; environmental impacts (CH<sub>4</sub> and NH<sub>4</sub> emissions, soil erosion, groundwater pollution, odour nuisance); CO<sub>2</sub> balance.

Chair: *Dr. Rudolf Braun, Univ. Nat. Resources & Applied Life Sciences, Vienna, Austria*

Introductory presentation: 11<sup>00</sup> – 11<sup>30</sup> hrs

*Prof. Dr. Peter Weiland, Federal Agricultural Research Center (FAL), Germany*

**“Results and bottle necks of energy crop digestion plants – Required process technology innovations”**

Reports on current research projects: 11<sup>30</sup> – 12<sup>15</sup> hrs

*Prof. Dr. Jukka Rintala, Jyväskylä University, Finland*

**“Preliminary results of biomass storing and pre-treatment”**

*Dr. Ake Nordberg, JTI, Sweden*

**“Preliminary results from the Agrioptigas project”**

*Ir. Hendrik Jan van Dooren, WUR, The Netherlands*

**“Experience with Co-digestion of energy crops”**

Scientific panel topic 2:

*Prof. Dr. Jukka Rintala, Jyväskylä, Finland*

*Dr. Ake Nordberg, JTI, Sweden*

*Dr. Jules Van Lier, WUR, The Netherlands*

*Prof. Dr. Charles Banks, Univ. of Southampton, UK*

*Dr. Arthur Wellinger, Novaenergie, Switzerland*

Discussion: 12<sup>15</sup>-12<sup>45</sup> hrs

Lunch: 12<sup>45</sup> – 14<sup>00</sup> hrs

### **TOPIC 3: 14<sup>00</sup>-15<sup>45</sup> hrs “**

#### **“Overall energy balance of crop to biogas systems”**

Energy balances for crop biomass systems - where are the boundaries, how to ensure comparability? Energy inputs to cultivation (ploughing, seeding, irrigation, fertilizer, pest control, harvest, transport), pretreatment & storage (chopping, ensiling), processing for energy recovery (pumping, mixing, heating/cooling) and residue treatment & reuse (separation, NH<sub>3</sub>-stripping, dewatering, drying, transport, application as fertilizer). Energy outputs (bio-energy yields, power & heat generation efficiency). Calculation of output / input relations for different crops and climatic conditions. Integration of energy crops with other biomass sources (e.g. municipal solid waste, agro and distribution wastes, sludges).

Chair: *Prof. Dr. Charles Banks, Univ. of Southampton, UK*

Introductory presentation: 14<sup>00</sup> – 14<sup>30</sup> hrs

*Dr. Andre Faaij, Copernicus Inst. for Sustainable Development, The Netherlands*

#### **“Energy balances of crop to biogas systems in relation to other biotransformations”**

Reports on current research projects: 14<sup>30</sup> – 15<sup>00</sup> hrs

*Dr. Pal Börjesson, Department of Technology and Society, Lund University, Sweden*

#### **Energy analysis and environmental analysis of biogas systems”(Confirmed)**

*Samuel Stucki, PSI, Switzerland*

#### **“Energetic use of biomass – Competing or complementing technologies? ”**

Discussion: 15<sup>00</sup>-15<sup>45</sup> hrs

#### Scientific panel topic 3:

*Don Ridley, Environment Agency, UK*

*Dr. Jeremy Woods, Imperial College, UK*

*Dr. Andrew Salter, University of Southampton, UK*

*Dr. Pal Börjesson, Department of Technology and Society, Lund University, Sweden*

Coffee break: 15<sup>45</sup> – 16<sup>15</sup> hrs

## **TOPIC 4: 16<sup>15</sup>-17<sup>45</sup> hrs**

### **“Potential of integrated biogas systems”**

Potential of crop to bio-energy systems in European- and eastern European countries; competition and synergies between different applications (food, industry, energy); advantages and disadvantages of biogas in comparison with other bio-fuels; substitution potential of biogas for fossil fuels; biogas production cost and possibilities for cost reduction; socio-economic factors; evaluation of transport fuel production, gas purification and reforming (use in fuel cells); integration of biogas recovery into biorefinery concepts

Chair: *Prof. Dr. Jukka Rintala, Univ. of Jyväskylä, Finland*

Introductory presentation: 16<sup>15</sup> – 16<sup>45</sup> hrs

*Prof. Dr. Johan Sanders, WUR, The Netherlands*

### **“Possibilities of integrating bioenergy (biogas) generation into other biomass based production systems”**

Reports on current research projects: 16<sup>45</sup> – 17<sup>15</sup> hrs

*Prof. Dr. Paul Struik, WUR, The Netherlands*

### **„Biocascading - Towards efficient biomass chains“**

*Jens Bo Holm-Nielsen, Aalborg Univ., Denmark*

### **„Predicted energy crop potentials for biogas – worldwide, regions – EU 25“**

Discussion: 17<sup>15</sup>-17<sup>45</sup> hrs

### Scientific panel topic 4:

*Dr. Paul Burgess, Cranfield University, UK*

*Prof. Dr. Alan Swinbank, Reading University, UK*

*Dr. Andre Faaij, Copernicus Inst. for Sustainable Development, The Netherlands*

*Prof. Dr. Paul Struik, WUR, The Netherlands*

*Dr. Samuel Stucki, PSI, Switzerland*

*Owe Jönsson, SGC, Sweden*

Concluding remarks: 17<sup>45</sup> – 18<sup>00</sup> hrs

*Prof. Dr. Charles Banks*

### **Hotel reservation and conference location:**

Meeting Centre Hoog Brabant  
Radboudkwartier 23  
3511 CC Utrecht  
The Netherlands  
Tel: 0031 (0) 30 233 15 25  
Fax: 0031 (0) 30 231 16 95  
e-mail <vergader@hoogbrabant.nl>

Hoog Brabant has no hotel accomodation, but there are numerous hotels in walking distance:

e.g.

The Best Western Amrath Hotel, Vredenburg 14, 3511 BA Utrecht  
NH Utrecht Hotel, Jaarbeursplein 24 3521 AR Utrecht  
The Park Plaza Hotel, Westplein 50 3531 BL Utrecht  
Malie Hotel, a Hampshire Classic Hotel, Maliestraat 2, 3581 SL Utrecht

A prebooking for a limited number of rooms has been made on a first come / first serve basis in the Best Western Amrath Hotel (see hotel registration form).

Further Hotel booking can be done through:

<http://www.bookings.net>

The city of Utrecht runs an internet hotel booking system, see:

Utrecht Hotel Service, Vinkenburgstraat 19, 3512 AA Utrecht, The Netherlands

Tel: 00 31 (0) 30 236 00 25 Fax: 00 31 (0) 30 236 00 38

Internet: [www.12utrecht.nl](http://www.12utrecht.nl)

e-mail: [uhs@vuvutrecht.nl](mailto:uhs@vuvutrecht.nl)

### **Programme enquiries to the workshop secretary and workshop registration:**

Rudolf Braun  
Institute of Environmental Biotechnology  
Department for Agrobiotechnology  
University of Natural Resources & Applied Life Sciences - Vienna  
A-3430 Tulln Austria – Konrad Lorenzstrasse 20  
Tel: +43 2272 66280 502  
Fax: +43 2272 66280 503  
email: <[Rudolf.Braun@boku.ac.at](mailto:Rudolf.Braun@boku.ac.at)>

### **Deadlines**

Hotel reservation & registration for the workshop must be done **before August 30, 2005**