

**Bioenergy's Impact on the Agri-
Food Sector –
What can we learn from a
transatlantic viewpoint?**



Acknowledgements



- Mary Ann Lila
- John Santas
- Steve Sonka
- Rich Vaughan
- Theresa Miller
- Hamish Gow
- Mike Grossman
- Tony Grift
- Teresa Heap
- Baron Piet van Waeyenberge
- Jean Dayde



ACES - Global Academy ©



- Year-long program
- Goals:
 - ▶ Learning in the international realm
 - ▶ Heighten global awareness among faculty in ACES.
- “Scholars” learn about the international resources available (Campus, State, Nation) to enhance
 - ▶ Teaching
 - ▶ Research
 - ▶ Extension



“Global Climate Change, and the Emerging Demand for a New BioEnergy Curriculum”

- World population will continue to grow!
2050: 6.5 billion -> 9.0 billion
- As a consequence:
 - ▶ Demand for meat will double by 2050
 - ▶ Demand for energy will double by 2050



Question 1 - Will biofuels become important?

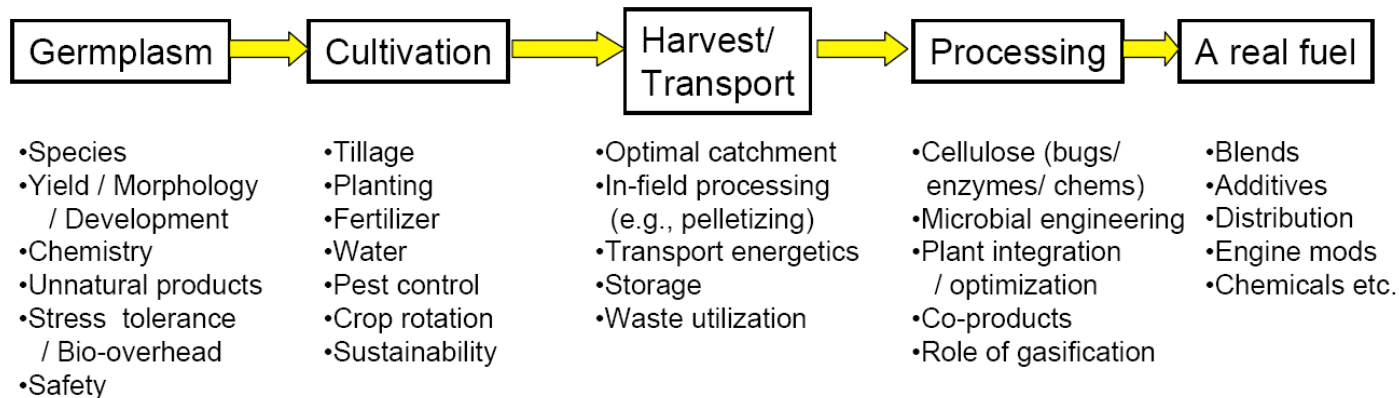
- short term – midterm – long term
- potential vs. reality
- developing countries vs. developed world



Question 2 - Will production of biofuels affect food security?

- Amount
- Distribution
- Prices

ACES – GA 2007 Theme



Source: Jim Breson, BP

Question 3 – What role will research play in balancing the need for biofuels and food?

Question 4 – How do we educate the future workforce needed for a biobased industry?

Why visit the European Union?



- EU and USA - development and efficient exploitation of renewable energy resources has high priority - **biomass** plays a key role.
- EU and USA - following different roadmaps to attain energy independence.
 - ▶ USA - production of biofuels for transportation
 - ▶ EU - generation of electrical power
- Differences in each system's constraints and opportunities (regulation, subsidies) explain the different paths being pursued yet they are little understood by the respective other side.
- Cross fertilization of ideas by bridging this gap.
- Finding innovative solutions to research and implementation challenges by taking a different perspective.

Immersion Trip - Highlights

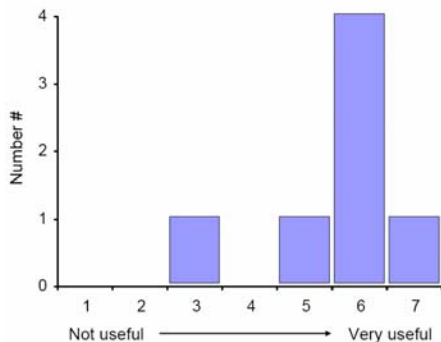


- Netherlands
 - Sept 10
Shell, Schothorst Feed Research
 - Sept 11
Wageningen University
- Bruxelles, Belgium
 - Sept 13
“Bioenergy” Workshop
 - Sept 14
U.S. Embassy, FAS
- Toulouse, France
 - Sept 15-18

Shell, Amsterdam, NL



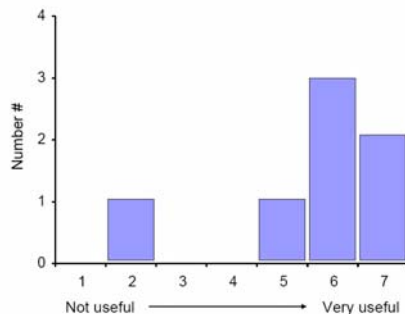
- Shell provided information about their involvement in
 - ▶ Gas to liquid fuels
 - ▶ Biomass to liquid fuels
 - ▶ CO₂ capture, sequestration
- Shell's perspective on
 - ▶ risks and benefits of biofuels
 - ▶ sustainability
 - ▶ emerging trends
- Only general information was provided; Shell employees were not allowed to share specific information.



Schothorst Feed Research



- Private research institute
- Research themes
 - ▶ Development of feed evaluation systems
 - ▶ Evaluation of raw materials
 - ▶ Nutrient requirements of high-yielding animals
 - ▶ Nutrition and environment
 - ▶ Nutrition and health
 - ▶ Nutrition and quality
- Biofuel and animal production are closely integrated.
- DDGS: U.S. – EC issues:
 - ▶ GMO contamination
 - ▶ Antibiotics (fermentation process)
 - ▶ Price
- 2nd generation biofuel co-products?



Wageningen University, NL

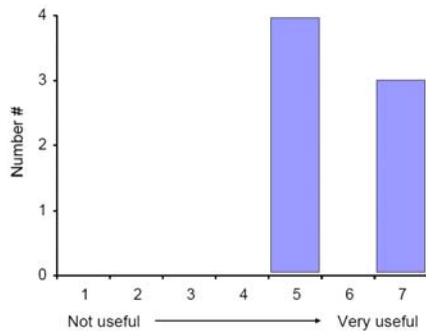


- Self-perceived leader in biobased industry research.
- Biobased economy – is one of WUR's investment areas.
- Biorefinery – The bridge between agriculture and chemical industry.

- Excellent exchange of information
 - ▶ Biobased products
 - ▶ Bioenergy and other alternative energy sources
 - ▶ Sustainability on a regional and global scale

- Great potential as a collaborator in Europe, contacts need to be expended.

- Sometimes too technical



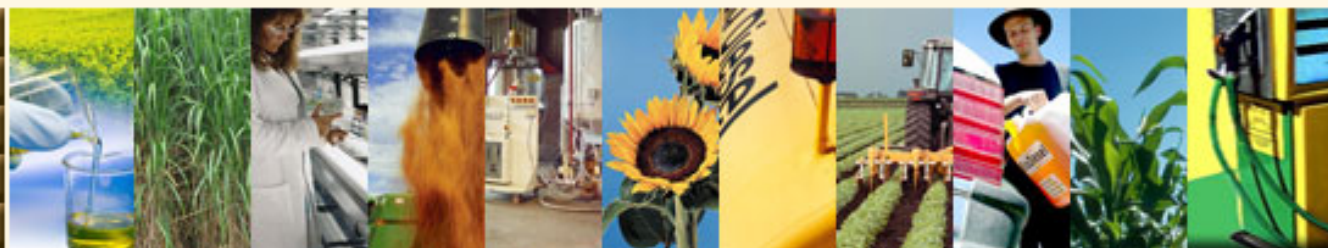


BIOENERGY'S IMPACT ON THE AGRI-FOOD SECTOR

WHAT CAN WE LEARN FROM A TRANSATLANTIC VIEWPOINT?

CLUB DEWARANDE | BRUSSELS, BELGIUM | SEPTEMBER 13, 2007

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Agenda
Venue
Registration
Global Academy



The recent rapid growth in the Biofuels sector is placing increasing pressure on industry, government and academia to effectively respond to a range of concerns in the agri-food sector. Given the size, speed and uncertainty in bioenergy growth, this response cannot be achieved individually, instead it will require a coordinated approach

The ACES Global Academy, a group of young to mid-career faculty has formulated this conference on Bioenergy Industry - Institution relations to encourage development of joint research, teaching and outreach efforts between industry, university and government communities in the EU and the U.S. The goal of the program will be to develop areas of possible joint research and learn jointly from updates in the industry on both sides of the Atlantic.

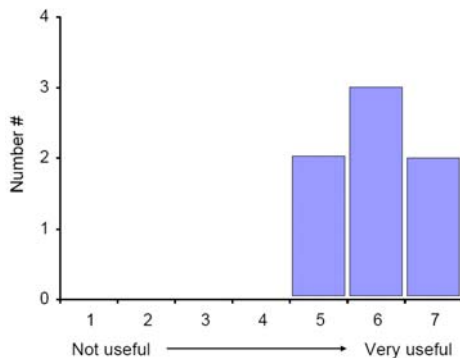
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Bioenergy Workshop - Bruxelles



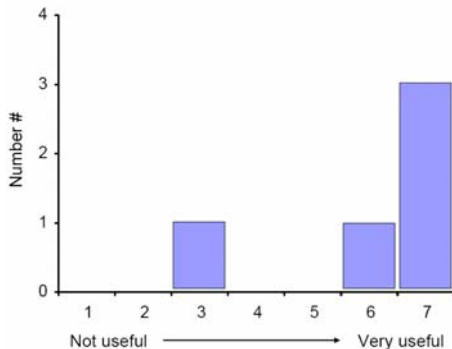
- Keynote presentations by Steve Sonka, UIUC (“Bioenergy in the USA”) and Wolfgang Muench, EU Commission (“The EU Biofuel Markets”).
- Industry and policy panel (Monsanto, Schothorst Feed Research Center, Elanco Animal Health USA-FAS)
- Discussion sessions on
 - ▶ Food vs. Feed vs. Fuel
 - ▶ Bioenergy Curriculum
- Discussions provoked by excellent presentations
Networking with industry participants
“Perceptions, emotions, and facts involved in EU’s debate on biofuels became clearer.”
- Discussion on bio-energy curriculum – but too short!



Purpan, Toulouse, France



- Outstanding hosts!
- Insightful introduction into the French system of educating agricultural “engineers”.
- A different teaching methodology.
- Focus on providing students with a broad experiences, including corporate internships.
- Focus on teaching but research is growing in importance.
- Dual degree options will open doors to future collaborations.
- “Too much related to pedagogy and not enough time with faculty visits.”





What did you learn about bioenergy issues?

Europe

- Bio-Gas, Bio-Diesel
Electricity
- Sustainability –
“Unsafe until proven save”
- Environmental impact
- Biotechnology
- North – South differences

USA

- Ethanol
- Dependency
- Production
- Rural development,
development of a bio-based
industry.



What did you learn regarding the need for a bioenergy curriculum?

- Most industry experts highlighted need for
 - ▶ Scientists with detailed knowledge in “traditional” sciences, in “core aspects of knowledge”.
 - ▶ Scientists that are able to work in interdisciplinary teams.
 - ▶ Employees with a general knowledge of the bioenergy pipeline.
- A bioenergy curriculum at undergraduate level not necessary but bioenergy related modules should be offered to get students interested.
- An interdisciplinary “Bioenergy – MSc.” might be useful.

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