

## Conference announcement

Rebecca Utteridge\*

# Green Polymer Chemistry 2013: Farm wars – how sustainable is renewable? (19–21 March 2013, Cologne, Germany)

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## Introduction

Will there be a “war over acres” as the fossil-based industry looks to replace its feedstock with renewable sources? This is not a new situation as we currently have the automotive industry, power stations and the chemical industry all vying for the same fossil fuels like oil, gas and coal. The answer is that there does not have to be if policy makers and the chemical industry start with a sustainable strategy and bear in mind the competition for resources. It takes hundreds of millions of years to form the oil in the North Sea, and this is not a time scale that allows for renewal of this resource any time soon.

## Government strategy

Dr. John Williams of the NFCC speaking at AMI’s international conference on Green Polymer Chemistry 2012 in Cologne commented that it partly depends on government strategy: for example, if the government dictates that all grid power is to come from biomass the competition for arable land will be tremendous, whereas if a renewable energy approach is used that incorporates alternatives such as solar and wind then there is much more room in the marketplace. There are also dynamics such as the capacity of many regions like the Ukraine, to produce more crops given the latest technology and varieties of seed, for example, in Western Europe the yield of wheat per hectare was around 7 tonnes in the 1980s and is now closer to 12 tonnes.

Williams noted that 40% of all crops are currently used in non-food applications and that this is not new – there

are big players in agriculture as there are in the petroleum industry and they will go with the market price. In addition many hectares are currently used for crops such as tobacco, which are not vital. His advice to the industry is to consider sustainability from the outset and to look at the whole supply chain: brand owners’ already have this system in place. The palm oil roundtable has already set up methods to help to ensure sustainability of this feedstock for a range of industrial uses.

## Relevancy to the polymer industry

Why is this relevant to the polymer industry? As fossil fuel supplies increase in price and supplies dwindle, the industry has to look at a long-term sustainable supply strategy primarily from plants. The technology to produce bioethanol is already in place for the automotive fuel industry, so it is available as a resource to produce ethylene and polyethylene, particularly in Brazil where production from sugar cane is high and arable land is abundant. Braskem is the market leader and supplies this polyethylene into the global market at a price premium, the company commented that it would not be possible to grow enough sugar cane to replace all of the Braskem polyethylene production. Dow and other companies are working on their own ethanol to ethylene technology in the region. In Brazil the sugar mills now tend to have a distillery attached and either supply sugar or ethanol depending on the market prices. There is technology to manufacture polypropylene from ethanol and other plant sourced feedstocks, and Solvay is planning to produce “green” PVC in Brazil with the ethylene component from plants (the chloride is from salt).

The ethanol price is now linked to automotive fuel with a price fix by the Brazilian government directly affecting the global markets. Sarah Hickinbottom at LMC has been looking at the price changes in vegetable oils and bioethanol in relation to oil pricing.

## Further developments

There are many small start up companies and universities developing synthesis routes to produce monomers from plant sources. They need investment and partners to take the idea from the page to the trial stages. Avantium is a key example as it has developed an alternative monomer to terephthalic acid in PET and testing of samples has produced bottles and films on existing PET processing equipment. The company now has development partners from brand owners Coca Cola and Danone.

Global Bioenergies is a small biotechnology group developing enzyme-based synthesis routes for the monomers butadiene and others, with partners like Synthos from Poland.

The universities have developed multiple synthesis routes on paper and in the test tube that are awaiting review for commercialisation. The agricultural University at Wageningen studies many aspects of renewable chemistry from suitable feedstocks, like tubers rich in

precursors of caprolactam and lysine, through biorefineries, to finding enzymatic pathways to a wide range of monomers. The Catalysis Institute at Leibnitz has a long list of potential products made from a variety of feedstocks using inorganic catalysts.

### The conference – venue

The next networking event on Green Polymer Chemistry 2013 will take place in Cologne, Germany from 19 to 21 March 2013. The venue will be the Hotel Maritim. Centrally located in Cologne, this hotel provides excellent panoramic views of the River Rhine. The Maritim Köln offers elegant accommodation and a spa with a gym and indoor pool.

The conference has attracted the whole industry supply chain including key brand owners, investors, the chemical industry, biotechnology companies and academics. For more information <http://www.amiplastics.com/events/Event.aspx?code=C499&sec=2855> or contact Rebecca Utteridge [rju@amiplastics.com](mailto:rju@amiplastics.com).

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