

## SENTRY CONFERENCE

*The recent annual conference organised by the UK farm management company Sentry attracted over 400 delegates. The theme this year was Can Farming lead the way back to prosperity? Bruce Knight reported (Crop Protection Monthly April 2010).*

Professor Harald von Witzke, who holds the chair in International Agricultural Trade and Development at Humboldt University, Berlin, presented a review of the issues affecting food security particularly up to 2017. He said that for most of the 20th century increased demand for food, globally, was more than met by increases in supply. The growth resulted from a combination of more land going into agriculture and increased productivity. The result was a gradual decline in agricultural commodity prices, up to 1990. Since 2000, however, growth in demand has exceeded growth in supply by a factor of two. Productivity between 1960 and 1980 had increased annually by 4% but today the annual rate is only about 1%. Professor Von Witzke concluded that the logical approach would be to step up expenditure on agricultural research. However, in practice it has declined.

Against this background there are other factors which will impact on the level of food productivity in the near future: water availability is constrained; changing demands for food such as much of Asia moving to meat diets; biofuels creating commodity price spikes; negative impact of climate change particularly in many of the poorest regions. Food prices will therefore be expected to rise in the next few decades. Data published in 2008 compared projected prices for 2013/15 compared with 2003/5. Projected price increases are: wheat, 14%; corn; 30%; oilseeds, 32%. An even more extreme situation is apparent if the increased cost of energy is factored in. Using 2008 data from the European Commission he projected an increase in the price of oil from \$45/barrel in 2003/5 to \$102/barrel by 2015/17. This would then lead to agricultural commodity price rises of: wheat, 72%; corn, 107%; oilseeds, 71%.

Professor Von Witzke painted a picture of potential further political unrest, possible food riots and migration away from regions where malnourishment occurs. He also made the point that it will be largely down to the developed countries to increase productivity through application of new technologies. The developing countries may have the potential in terms of agricultural land but do not have the skills needed to bring about increased productivity quickly enough.

An example of the impact of biofuel production on the agricultural industry was explained by Bill Northey, Secretary of Agriculture for the State of Iowa. Total agricultural output from Iowa is second only to California, with around \$20 billion sales per year, roughly 50:50 between crop and livestock products. Bioethanol production in the state has already exceeded consumption by the three million population by a factor of two. When corn production was in surplus, and prices were low, rapid investment in bioethanol production followed. There are now 39 operating plants in the state. But prices have dropped and further investment has ceased. The existing plants will continue. Biodiesel production from soya bean also took off rapidly but in this case the price of oil has increased from 23 cents/gallon to 38 cents/gallon and is still rising. Consequently many plants have been forced to close. Even in a major agricultural state such as Iowa, the spend on agricultural research is being reduced. Bill Northey has had to trim the budget to meet reduced overall financial targets for the state.

Julian Little, speaking as chairman of the UK's Agricultural Bio-Technology Council, gave an update on the global progress of GM crops, in comparison with the EU. In 2008 the area of GM crops grown globally, 125 million hectares, exceeded the total cropped area in the UK, France, Germany, Belgium and Ireland. It is also significant that the GM cotton area in a small African state, Burkina Faso, exceeds the area of GM crops in the EU, about 100,000 hectares. Mr Little also presented some data that contradicts the arguments that GM technology does not enhance yields and that it is only the large scale farming enterprises that benefit. In India, where cotton is mainly grown by resource poor farmers, yields between 1995 and 2000 averaged 707 kg/ha. Over the period between 2005 and 2007, after the introduction of GM insect tolerant cotton, yields averaged 1213 kg/ha.

The UK is supportive of trying to speed up the regulatory process within the EU, alongside the Netherlands, Belgium, Scandinavian countries, Spain and Portugal. However Austria, Italy and Greece are against. A Dutch proposal put forward in 2009 suggests that once clearance is given by the European Food Standards Agency it should be up to member states to decide whether to grow the crops in their country. However to achieve this change it will probably require a complete overhaul of the legislation and this would mean a major delay.

The EU has responded quickly before, with the acceptance of livestock feed containing GM ingredients, when the livestock industry was no longer sustainable when reliant on high price GM free feed. With different priorities such as climate change impact and food security now in place there could yet be less resistance to the introduction of GM crops in the EU. Mark Price, managing director of the supermarket chain Waitrose, still considered acceptance of GM foods by the consumer a barrier to their introduction. In the meantime other issues such as reducing food waste are judged to be much more important.

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## **WORLD BIOFUELS**

*The World Biofuels Markets conference and exhibition held at the Rai Congress Centre, Amsterdam on March 15 -17 attracted some 1400 delegates and close on 50 exhibitors from around the world. Fuel companies, transport organisations, engineering and processing companies, information suppliers and leading policy makers were well represented. There were however rather fewer from the agribusiness sector which will be primarily responsible for supplying the feedstock. With up to eight concurrent sessions, a wide range of topics were discussed. Bruce Knight reported (Crop Protection Monthly April 2010).*

### **The role of biofuels in meeting energy and climate change requirements**

In the keynote plenary session, Dr Gro Harlem Brundtland, UN special envoy on climate change and former Prime Minister of Norway, tried to present an optimistic picture on the need for new "green" investment in renewables. The relative failure of the Copenhagen climate change conference coupled with the global recession were barriers that had to be overcome. In her words: "Failure to act is not an option." She stressed the need to bring on board the BRIC countries (Brazil, Russia, India, and China) and to establish greater accord between political, business and NGO leaders.

Nobuo Tanaka, executive director of the International Energy Agency, IEA, reinforced the argument for the use of biofuels and biomass energy to help stabilise greenhouse gas (GHG) emissions at the target of 450 parts per million (ppm) of CO<sub>2</sub>-equivalent, which is needed just to maintain global temperature increase at no more than 2° C (Copenhagen only agreed on 550 ppm and 3°C). He made the stark statement that without new policies, global CO<sub>2</sub> emissions are set to rise by 40% by 2030. According to IEA forecasts, virtually all of the projected net increase in oil demand by 2030 will come from transportation. After 2020 the increased demand will be mainly for trucks, ships and aircraft.

To meet the 450 ppm scenario, the IEA calculates that biofuels will need to provide 9.3% of global transport fuel by 2030. After 2020 second generation biofuels (ligno-cellulosic biomass-to-liquids, algae etc) should be the main supply source. But until then conventional biofuels mainly from conventional crops will be the only way forward.

### **Potential negative impact from biofuels**

Paul Hodson from the European Commission outlined the EU policies that were being developed in response to political pressures to reduce negative environmental impacts from biofuel production. Biofuels are the fastest growing renewable energy technology in the EU. Domestically produced biodiesel is still the main source. So far it is a case of slower abandonment of productive land for oilseed crop production rather than conversion of new crop land. The Commission is standing by its original analysis that biofuels were not the prime cause of the 2008 food price spike.

The EU Renewable Energy Directive, RED, is due to come into force by December 2010. This sets mandatory sustainability standards for transport biofuels (*CPM January 2010*). Details of the criteria, and what reporting requirements will be called for, will be communicated over the next few months. Still on-going are discussions on how any indirect effect on land use due to biofuels will be measured and whether it is always a major issue. A public consultation process will be set up, probably over the May-July 2010 period.

Günther Fischer, International Institute for Applied Systems Analysis, IIASA, Austria, reported on detailed studies outlining the potential impact on food crops and the environment under different biofuel production scenarios. The impact of biofuels, if the announced national targets are followed, will be substantially greater than that from IEA projections, both on food and the environment. The models clearly indicate that increased agricultural productivity is the key to minimising negative impacts. To maintain what Mr Fischer described as 'low disturbing' biofuel development will require agricultural productivity increases to exceed food demand growth. In the case of cereals for bioethanol production about two-thirds of the increase will have to come from additional crop productivity. The remaining one-third is assumed to come from the switch away from cereals used for feed and food. In policy terms continued effort to enhance yields, maintain land quality and step up GHG reduction research are essential.

## **New markets and new technologies**

In the case of aircraft, even in the long term, there will be no alternative but to use liquid fuels. The aircraft industry is therefore looking at biofuel options which do not impact on food crops. Jan Ernst de Groot, managing director, KLM Royal Dutch Airlines, described a test project based on the use of a fuel derived from Camelina. This underdeveloped oilseed crop grows in dry regions in the northern hemisphere. Other speakers referred to the potential of Jatropha, a warm climate and arid zone crop, as a source of bio-kerosene for aircraft. Hans van der Berg, Mother Earth Investments, made the case for investment in Jatropha. He described two projects in Asia that the company is involved with. In Timor, Indonesia an initial 50,000 hectares are planned, with an ultimate potential of one million hectares. In a smaller project in Hainan, China 3,000 hectares are already planted.

Commitment to R & D into biofuel crop production by a major research based company was demonstrated by Dr Shachi Sharma, Syngenta, Switzerland. There have been relatively few recent developments in sugar cane production methods and yet it is a major feedstock for bioethanol. The *Plene* propagation system relies on the planting of buds rather than cane lengths. The fungicide treated buds can be planted with adapted seeders saving considerable operational costs and using minimum cultivation.

For corn production the *Enogen* system is based on the introduction of high amylase into the seed. This provides significant economic and energy savings during the conversion process to bioethanol. FDA clearance is granted and approval from the USDA is pending. Syngenta also has key patents on expressing enzymes in plants which offer opportunities in the production of second generation biofuels from ligno-cellulose such as corn stover, or energy grasses. The company is in discussion with partners to help bring these products to the market.

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