“Green (and Brown and Red) Prospects for Algal Biofuels”
Professor Alison Smith
Cambridge University

The main thrust of Professor Smith’s talk was to assess the prospects for using algal biofuels to provide a future source of renewable energy in order to complement global bio energy production.

The algal biomass from photosynthesis could be used to produce bioethanol from the carbohydrate extract and biodiesel from the lipid/hydrocarbon component. Biodiesel has already been produced from algal biomass on a small scale and a USA company is already running a car, the Algaeus, on it. Presently only around 1% of the earth’s energy needs are supplied via renewables and of those currently available (wind, geothermal, tides, hydro-electric and solar) solar energy is, by several orders of magnitude, capable of delivering much greater energy levels in the form of electricity and biomass.

Although the conversion of biomass for fuel production by edible plants is a contentious area, as food production can be compromised, this would not be true of non-food plants such as algae. Prof Smith revealed that more than 100,000 species of red, brown and green algae exist from which biomass could be produced, ranging from large seaweeds (macroalgae) down to microscopic single cells (microalgae).

Given the capability of algae to fix more than 50% of the world’s carbon in water there is huge scope for reducing pressure on the 4% of farmland currently used for food production. Algal biomass would certainly help meet global food targets for 2050 and beyond. However, most current commercial production is for high value, low volume products such as pigments and vitamins whereas the major challenge will be to cultivate algae at scale and with high productivity for bio fuels. Several examples of technology being developed for this were shown. In response to a final question form the audience Professor Smith was confident that commercially produced algal biofuels would be on the market within 10 years.

Given on Wednesday 9th January 2013 at the Royal Agricultural College